



FH AACHEN  
UNIVERSITY OF APPLIED SCIENCES

# International Automotive Engineering Master of Science



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All information about the degree programme can also be found on the internet. To this end, use a suitable reader to take a photo of the QR code.

[fhac.de/master-automotive-engineering](http://fhac.de/master-automotive-engineering)



# Discover the FH Aachen Collection

[www.fhac.de/shop](http://www.fhac.de/shop)

Cars „made in Germany“ continue to enjoy a global reputation. But the vehicles of tomorrow are different in every respect from what we have been used to for decades. More and more, it's about digitalisation, electrification, connectivity and development partnerships. What all manufacturers and suppliers have in common is the striving for the best eco-balance and the issue of sustainability. And „Made in Europe“ must also be scalable for a wide range of models and size classes. We want to prepare you for these challenges of the future with this Master's programme. We will train you to ensure that „Invented in Germany“ has the power to catch up and overtake.

Hardly anywhere else do people spend as much time in a confined space as in a car. A homely and functional interior is therefore just as important for designers and engineers as good engine performance, range, road holding or infotainment integration. In addition to convenience, safety, robustness, comfort or sportiness, another dimension is becoming increasingly important: social standards in the supply chain must be met and materials should be significantly more sustainable. The modern vehicle is a digitally connected car. An exemplary core topic in research and development is the introduction of the Euro 7 standard planned by the EU Commission from 1 July 2025. Due to the limit values for brake and tyre abrasion that are now in place for the first time, electric vehicles are also affected by the exhaust emission standard. In addition, the rules for pollutant emissions at cold start and low load are considerably tightened.

The availability of partners across the entire value chain is one of the greatest strengths in the competition for the best vehicles of tomorrow. Without intercultural cooperation, no new vehicle of tomorrow will be created. We prepare you to enter and participate in the trends of the industry well prepared. High-performance solid batteries, low-cost sodium-ion batteries, battery exchange systems and efficient charging management are top issues in a global industry with gigafactories for batteries also in Germany, often in cooperation with international manufacturers. German companies in particular are global leaders in the use of environmentally friendly materials in the interior, in sheet metal, batteries or paints, and in recycling concepts along the entire value chain. Climate-neutral operations in the automotive industry have long been a sustainable purchasing argument for a global clientele.

# International Automotive Engineering Master of Science Mission



The high level of academic education in a 3-semester degree programme, or a 4-semester dual degree programme, will support students in becoming professionals in their fields of expertise. The following pages will give you an overview about possible fields you will be working in.

- > Vehicle Integration and Design
- > CAE - Technical Calculation
- > Testing and Validation
- > Electrics/Electronic Development
- > Project Management

The degree programme not only comprises the subjects of a dedicated focus area. You will, additionally, acquire versatile competences. The course of study takes place within the framework of international cooperation and is therefore taught in English. The training is supplemented by interdisciplinary modules, such as Technical German, Critical Thinking or Intercultural Communication.

# Vehicle Integration and Design From Individual Modules to a Whole, Functioning Vehicle

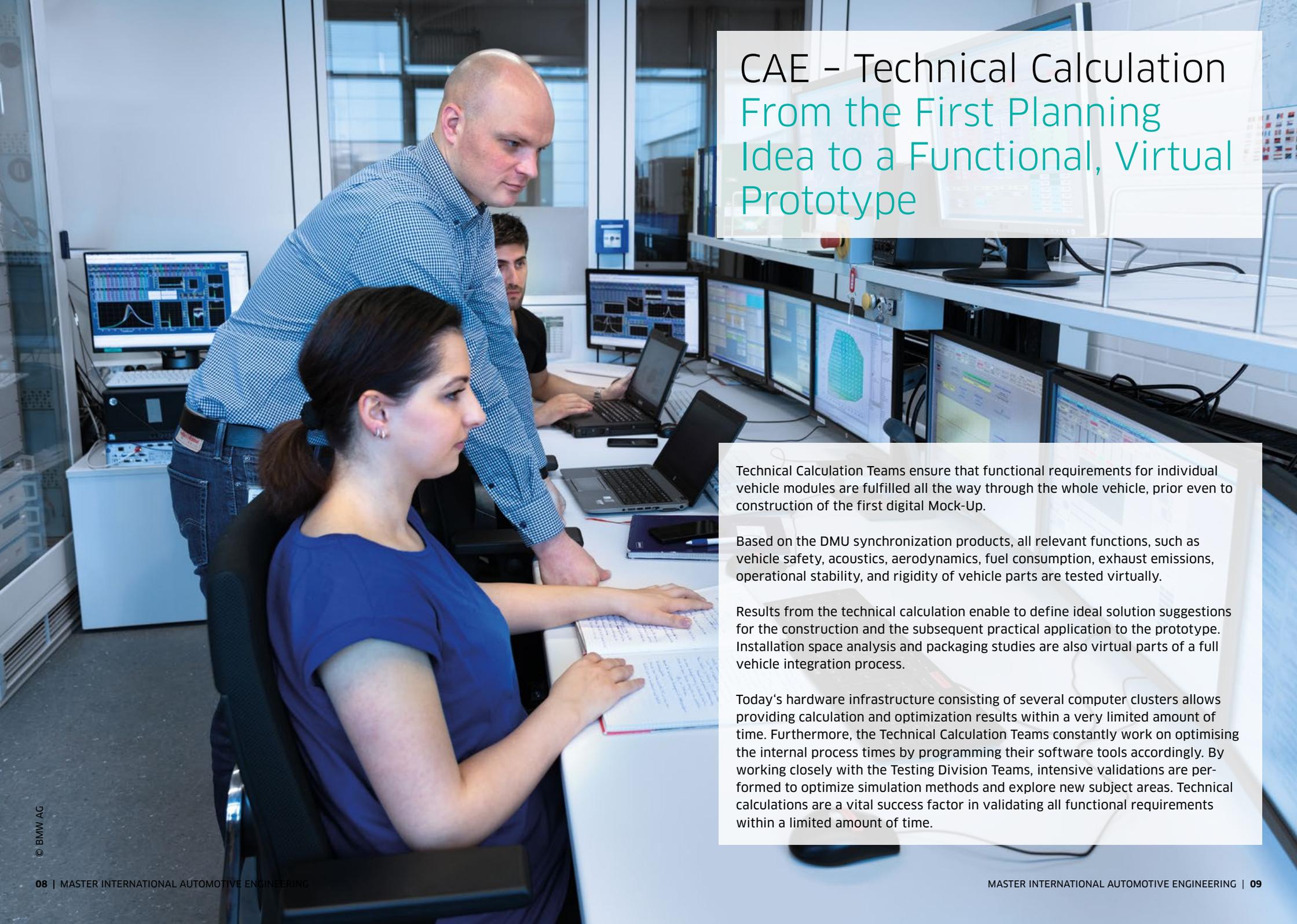
Vehicle Integration Teams keep an eye on the entire development process. Organising projects in an economical manner is just as important as fulfilling all customer and technical requirements.

The Vehicle Integration Team controls and monitors the defined requirements for vehicle safety, fuel consumption, emissions, acoustics and aerodynamics throughout the entire development process: from design, simulation, testing and validation to certification across all modules. It ensures the mechanical integration, the wedding of the powertrain/chassis system and the body while integrating electronic/electric systems and taking care of the homologation activities.

In order to plan for the validation of developments, it is important to establish project plans controlling the entire course of the project and covering all modules and functions. How many prototypes are needed? Which tests can be performed using which prototypes?



Together with the experts from all disciplines, the Vehicle Integration Team taps into synergy effects in order to reduce the prototype cost. The goal is to apply a development plan that is both time and cost effective. In order to comply with legal requirements, the Vehicle Integration Team ensures access to all applicable laws worldwide concerning vehicle development and supports the individual departments in their development efforts.



# CAE - Technical Calculation From the First Planning Idea to a Functional, Virtual Prototype

Technical Calculation Teams ensure that functional requirements for individual vehicle modules are fulfilled all the way through the whole vehicle, prior even to construction of the first digital Mock-Up.

Based on the DMU synchronization products, all relevant functions, such as vehicle safety, acoustics, aerodynamics, fuel consumption, exhaust emissions, operational stability, and rigidity of vehicle parts are tested virtually.

Results from the technical calculation enable to define ideal solution suggestions for the construction and the subsequent practical application to the prototype. Installation space analysis and packaging studies are also virtual parts of a full vehicle integration process.

Today's hardware infrastructure consisting of several computer clusters allows providing calculation and optimization results within a very limited amount of time. Furthermore, the Technical Calculation Teams constantly work on optimising the internal process times by programming their software tools accordingly. By working closely with the Testing Division Teams, intensive validations are performed to optimize simulation methods and explore new subject areas. Technical calculations are a vital success factor in validating all functional requirements within a limited amount of time.

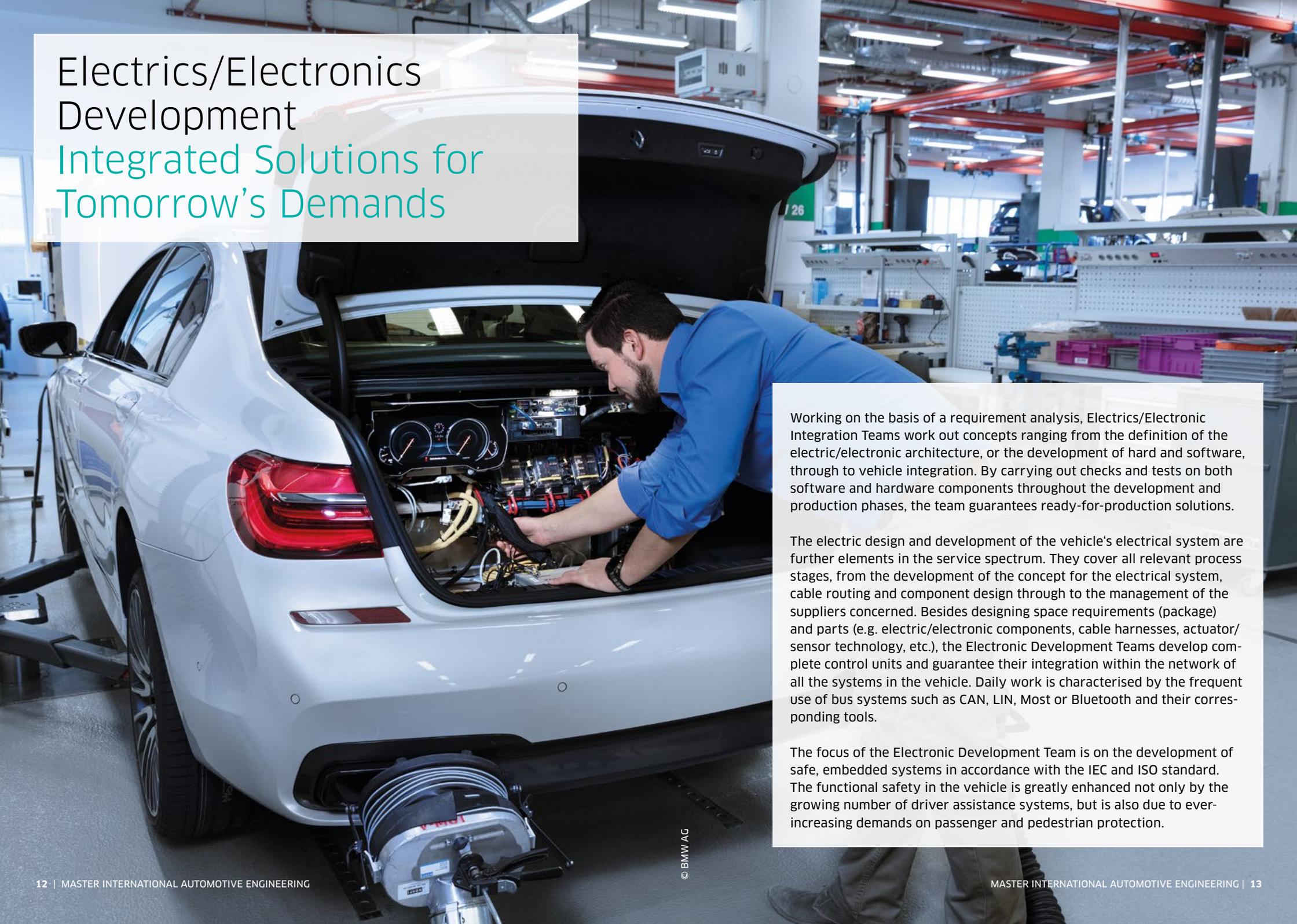


## Testing and Validation Anything That Is Meant to Go into Production Has to Pass Laboratory Tests

In testing laboratories, virtual simulation results are tested and validated under real conditions. Whether single assemblies or the whole vehicle are tested, testing equipment enables to simulate any possible impact on the vehicle later on in real life situations (mechanical tests and environmental simulations, functional and life span tests of e.g. engine and transmission, vibroacoustic appraisals, passive vehicle safety, vehicle trials, ...). Testing and Validation Teams are a vital part of the integrated development process. It is integrated with the Technical Calculation Teams and focuses on validating and confirming virtual simulation results. Testing results are immediately fed back to development and contribute to constant quality enhancement. There are no compromises for companies when it comes to quality.

From creating specifications and continuous development controlling, defining methods to documenting testing results in detail, the Vehicle Integration Teams ensure that tests are conducted with the required intent. Test results are used to benchmark the whole vehicle.

# Electrics/Electronics Development Integrated Solutions for Tomorrow's Demands



Working on the basis of a requirement analysis, Electrics/Electronic Integration Teams work out concepts ranging from the definition of the electric/electronic architecture, or the development of hard and software, through to vehicle integration. By carrying out checks and tests on both software and hardware components throughout the development and production phases, the team guarantees ready-for-production solutions.

The electric design and development of the vehicle's electrical system are further elements in the service spectrum. They cover all relevant process stages, from the development of the concept for the electrical system, cable routing and component design through to the management of the suppliers concerned. Besides designing space requirements (package) and parts (e.g. electric/electronic components, cable harnesses, actuator/sensor technology, etc.), the Electronic Development Teams develop complete control units and guarantee their integration within the network of all the systems in the vehicle. Daily work is characterised by the frequent use of bus systems such as CAN, LIN, Most or Bluetooth and their corresponding tools.

The focus of the Electronic Development Team is on the development of safe, embedded systems in accordance with the IEC and ISO standard. The functional safety in the vehicle is greatly enhanced not only by the growing number of driver assistance systems, but is also due to ever-increasing demands on passenger and pedestrian protection.

# Project Management

## The Nerve Center



## PROJECT MANAGEMENT

The challenge is bringing together customers, system developers and partners to work as an integrated team. To this end, minimising and supporting the interface is one of the key factors.

Development projects need to be well-structured and effectively organised so that their complexity remains at a controllable level, and deadlines, budgets and pre-defined quality goals can be met.

For successful project management, this is the guiding principle. Planning, continued testing, recognising optimisation potential and regulation make up the control system Project Management Teams have mastered. At the same time, standardised management methods have to be utilised that enable to adjust to individual client processes.

Project Management Teams ensure a project is handled optimally by establishing a clear analysis of customer requirements, defining product oriented responsibilities and by matching expectations with industry-specific application of each individual task.

# Alumni Statements



Nitesh Shenoy

The vibrant student life in Aachen with its huge population of international students and FH Aachen being ranked every year as one of the top FHs in Germany made FH Aachen my dream university while applying to automotive engineering masters courses in Germany.

State of the art labs, professors

who have had decades of practical experience in the industry, excursions to companies and guest lectures from industry experts makes sure that you are at the cutting edge of technology. One of the best aspects of the course is that the lectures are supplemented with hands-on practical sessions where you can apply the knowledge gained from the course directly on projects using the tools and hardware being currently used by the industry for their R&D work.

Hence, I believe that the Masters' program is an excellent springboard to a successful career in the automotive industry not only in Germany but also the entire world.



Amulya Mantha

The Master's course of study at FH Aachen made my dream to study automotive engineering in Germany come true. A well-structured programme including individually chosen courses kick-started my career in the automotive industry. The faculty is keen, approachable, and always ready to offer guidance. Life in Aachen has been great, with lots of activities and opportunities to interact with local and international students. All in all, I would recommend studying in Germany.



# Admission Requirements

## 3-Semester Degree Programme

Only applicants with the following qualifications can be considered for the application procedure: An excellent Bachelor Degree in Automotive Engineering or Mechanical Engineering with corresponding specialisations with at least 210 ECTS

- > Applicants, whose university entrance qualifications were not acquired at a German-speaking university, have to provide proof of knowledge of the German language: Goethe Certificate A2 for the admission to the degree programme, and Goethe Certificate B1 for the admission to the Master thesis.
- > Applicants, whose university entrance qualifications were not acquired at a university in a country that participates in the Bologna Process have to send a certified copy of the "Graduate Record Examination (GRE) - General Test" results.
- > Proof of English language skills (TOEFL/IELTS).
- > APS certificate for applicants from China, India and Vietnam.

## 4-Semester Degree Programme

(Dual Degree Programme) Requirement of English language proficiency for RMIT enrolment:

- > If you have studied for at least 2 years and your qualification is taught and assessed in English, you may be deemed to have met the English requirement (an official letter from the institution stating the degree programme is entirely taught and assessed in English must be submitted).
- > Fachhochschulreife with, at least, the grade 3 ("Befriedigend") in English, or Abitur with at least 7 points in English, or DAAD language test with a minimum of B grades in all sections (completion within 5 years of RMIT program commencement).

Detailed information can be found at [fhac.de/bewerbung-ia.v](http://fhac.de/bewerbung-ia.v).

# Degree Programme Profile

Choose your modules out of 2 specific Automotive subject catalogues and 1 General Competences subject catalogue

The Faculty of Aerospace Engineering of the FH Aachen - University of Applied Sciences (FH Aachen) offers a 3- and 4-semester Master's degree programme. Within the 3-semester Master's degree programme, students can freely choose their subjects from the "Synergetic Modules Catalogue" and "Advanced Automotive Engineering Catalogues" and one module from a „General Competencies Catalogue“. The 4-semester degree programme has a fixed study plan but a free choice of one subject of the "General Competencies Catalogue".

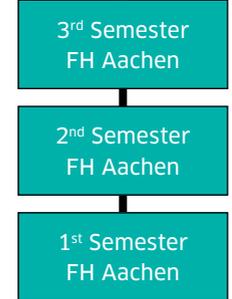
Students can specialise and deepen their knowledge in specific focus areas "Vehicle Propulsion Engineering", "Automotive Body Engineering" and "Computational Aided Engineering Automotive", that have a preselection in Advanced Automotive Engineering modules or opt for General Automotive Engineering, which gives more freedom to choose.

Graduates receive the title of Master of Science (M.Sc.) for the 3-semester programme. In the 4-semester dual degree programme, graduates receive the titles of Master of Science (M.Sc.) and Master of Engineering (M.Eng.).

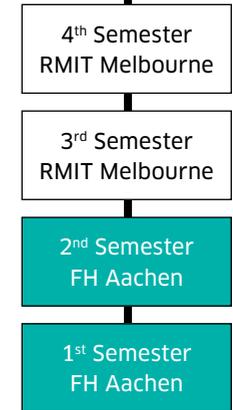
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## Study Plans

Master of Science



Master of Engineering/Master of Science  
Dual Degree Programme



Identical Admission Procedure for German Master's Degree Programmes

## Modules FH Aachen

	GAE	Focus VPE	Focus ABE	Focus CAEA	Dual Degree
Synergetic Modules (SM) Catalogue	Free Choice	Free Choice	Free Choice	Free Choice	Fixed Modules
Advanced Automotive Engineering (AAE) Catalogue	Free Choice	Fixed Modules	Fixed Modules	Fixed Modules	Fixed Modules
General Competences Catalogue	Free Choice	Free Choice	Free Choice	Free Choice	Free Choice

Abbreviations:  
 GAE=General Automotive Engineering  
 VPE=Vehicle Propulsion Engineering  
 ABE=Automotive Body Engineering  
 CAEA=Computational Aided Engineering Automotive

■ Free Choice □ Fixed Modules

# Curriculum

## 3-Semester Degree Programme

Name of Module	C/E	GAE Cr	CAEA Cr	VPE Cr	ABE Cr
<b>1<sup>st</sup> Semester (SuSe) or 2<sup>nd</sup> Semester (WiSe)</b>					
Synergetic Catalogue (SM)	E	10	15	15	10
Advanced Automotive Engineering Catalogue (AAE)	E	20	10	15	15
General Competencies Catalogue (GC)	E	0	5	0	5
Total		<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>
<b>2<sup>nd</sup> Semester (SuSe) or 1<sup>st</sup> Semester (WiSe)</b>					
Synergetic Catalogue (SM)	E	10	15	5	15
Advanced Automotive Engineering Catalogue (AAE)	E	15	15	20	15
General Competencies Catalogue (GC)	E	5	0	5	0
Total		<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>
<b>3<sup>rd</sup> Semester (SuSe) or 3<sup>rd</sup> Semester (WiSe)</b>					
Master Thesis	C	29	29	29	29
Colloquium	C	1	1	1	1
Total		<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>
<b>Total cp</b>		<b>90</b>	<b>90</b>	<b>90</b>	<b>90</b>

GAE = General Aerospace Engineering  
 CAEA = Computational Aided Engineering Automotive  
 VPE = Vehicle Propulsion Engineering  
 ABE = Automotive Body Engineering

SuSe = Summer Semester  
 WiSe = Winter Semester

The descriptions of contents of the study modules are available online.

CR: Credits      C: Compulsory      E: Elective      SWS: Contact hours per week  
 L: Lecture      T: Tutorial      Lab: Laboratory      SU: Seminar

## Elective Modules

Name of Module	C/E	CR	SWS				
			L	T	Lab	SU	Σ
<b>Summer Semester Synergetic Modules</b>							
Control System Design	E	5	2	1	1	0	4
Advanced CAD Methods	E	5	0	0	4	0	4
Neural Networks and Artificial Intelligence	E	5	2	1	1	0	4
Design of Experiments and Process Optimization	E	5	2	1	1	0	4
<b>Summer Semester Advanced Automotive Engineering Modules</b>							
Vehicle Structures - FEM	E	5	1	0	3	0	4
Electronics for Autonomous and Connected Vehicle Mobile Systems	E	5	2	1	1	0	4
Automotive User Interface Design	E	5	2	1	1	0	4
Environmental Impact of Vehicle Propulsion Systems	E	5	2	1	1	0	4
Design of Electronic Powertrain Management Systems	E	5	2	1	1	0	4
<b>Winter Semester Synergetic Modules</b>							
Structural Dynamics	E	5	2	1	1	0	4
Advanced Finite Element Methods	E	5	2	1	1	0	4
Applied Computational Fluid Dynamics	E	5	2	0	2	0	4
Composite Design and Manufacturing	E	5	2	1	1	0	4
<b>Winter Semester Advanced Automotive Engineering Modules</b>							
Vehicle Interior - Simulation and Evaluation	E	5	1	3	0	0	4
Vehicle Acoustics	E	5	2	1	1	0	4
Global Automotive Homologation	E	5	2	0	0	2	4
Powertrain Calibration: Propulsion Systems	E	5	2	1	1	0	4
Electrified Vehicles Components Modelling	E	5	2	1	1	0	4
Climate Change Impact on the Automotive Sector	E	5	3	0	0	1	4

The descriptions of contents of the study modules are available online.

CR: Credits      C: Compulsory      E: Elective      SWS: Contact hours per week  
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# General Competencies Catalogue

Name of Module	C/E	CR	SWS				Σ
			L	T	Lab	SU	
<b>Summer Semester</b>							
Engineering meets Design	E	5	0	0	0	4	4
Management of Automotive and Aerospace Suppliers	E	5	2	2	0	0	4
Technisches Deutsch		5	0	0	0	4	4
Other Faculty electives	E	5	0	0	0	4	4
<b>Winter Semester</b>							
Critical Thinking and the Scientific Method	E	5	0	0	0	4	4
Intercultural Communication	E	5	0	0	0	4	4
Transforming Urban Mobility	E	5	0	0	0	4	4
Other Faculty electives	E	5	0	0	0	4	4

The descriptions of contents of the study modules are available online.

CR: Credits      C: Compulsory      E: Elective      SWS: Contact hours per week  
L: Lecture      T: Tutorial      Lab: Laboratory      SU: Seminar

# Curriculum 4-Semester Degree Programme

Example for the commencement of studies in the winter semester in Aachen

Name of Module	C/E	CR	SWS				Σ
			L	T	Lab	SU	
<b>1<sup>st</sup> Semester (Winter Semester, FH Aachen)</b>							
Advanced Finite Element Methods	C	5	2	1	1	0	4
Applied Computational Fluid Dynamics	C	5	2	0	2	0	4
Vehicle Acoustics	C	5	2	1	1	0	4
Global Automotive Homologation	C	5	2	0	0	2	4
Powertrain Calibration: Propulsion Systems	C	5	2	1	1	0	4
Elective Module General Competencies Catalogue	E	5					4
Total		30	-	-	-	-	-
<b>2<sup>nd</sup> Semester (Summer Semester, FH Aachen)</b>							
Control System Design	C	5	2	1	1	0	4
Advanced CAD Methods	C	5	0	0	4	0	4
Vehicle Structures - FEM	C	5	1	0	3	0	4
Automotive User Interface Design	C	5	2	1	1	0	4
Environmental Impact of Vehicle Propulsion Systems	C	5	2	1	1	0	4
Design of Electronic Powertrain Management Systems	C	5	2	1	1	0	4
Total		30	-	-	-	-	-

The descriptions of contents of the study modules are available online.

CR: Credits      C: Compulsory      E: Elective      SWS: Contact hours per week  
L: Lecture      T: Tutorial      Lab: Laboratory      SU: Seminar



# Modules FH Aachen

## Control System Design (67101)

- > State space systems
- > Multi-input multi-output (MIMO) control and optimal control
- > State observation
- > System identification
- > Nonlinear control

## Advanced CAD Methods (67102)

- > Modelling of wireframe structures
- > Mathematical description of curves and surfaces
- > Modelling of advanced surfaces and shapes
- > Modelling of full-parameterized parts
- > Analyzing and evaluating of surfaces

## Neural Networks and Artificial Intelligence (67103)

- > Neural networks, machine learning, Big Data
- > Supervised and unsupervised learning
- > Application, visualisation and analysis of data

## Design of Experiments and Process Optimization (67104)

- > Objectives, design variables, factors, factor levels
- > Full factorial experimental designs and screening experimental designs
- > Multiobjective optimization via genetic algorithms

## Structural Dynamics (67105)

- > Creation of damping and mass matrices within the finite element method (FEM)
- > Modal analysis using FEM and experiment as a basis for structural analysis
- > Calculation of the forced vibrations proportional and non-proportionally damped linear vibration systems
- > Explanation of structural nonlinearities and extension to nonlinear FEM calculations

## Advanced Finite Element Methods (67106)

- > Derivation of a finite element formulation for static problems
- > Nonlinear material behaviour (creep and plasticity)
- > Treatment of contact problems
- > Basic introduction into stability problems
- > Heat transfer and the corresponding thermal stresses

## Applied Computational Fluid Dynamics (67107)

- > Derivation and discretization of the conservation equations for fluid dynamics
- > Solution methods for discretized partial differential equations
- > Grid generation and turbulence modelling
- > Examination of CFD results
- > Guided CFD tutorials and final CFD project work with presentations

## Composite Design and Manufacturing (67108)

- > Material characteristics and mathematical material modeling
- > Guide lines for lightweight design using monolithic composites and sandwich structures
- > Analytical and numerical procedures for strength assessment and manufacturing engineering
- > Part design, strength evaluation and manufacturing engineering using realistic industry examples

## Vehicle Structures - FEM (67301)

- > Functional attributes in FEM simulation and real world testing for automotive body structures
- > Design and optimization for crashworthiness, NVH (noise/vibration/harshness) and durability
- > Planning and executing structural test and performing FEM-simulation with Hyperworks
- > Understanding the meaning of simulation and testing in the development of vehicles advanced automotive

## Electronics for Autonomous and Connected Vehicle Systems (67302)

- > Types of electrified vehicles components
- > Electrified vehicles components function specification
- > Mathematical description and modelling of electrified vehicles components
- > Electrified vehicles components control
- > MIL, SIL, HIL, RCP methods in components development
- > Application and calibration processes, model-based development

## Automotive User Interface Design (67304)

- > Fundamentals: Anthropology, human cognitive ergonomics, human perception and information processing
- > Requirements and development methods for interaction elements such as touch screens and buttons
- > Usability and user experience
- > Development of interaction and display concepts (HMI) for the application in the vehicle and in the digital vehicle ecosystem
- > Evaluation of user interface and interaction by application of appropriate methods
- > Effects of and requirements caused by mega trends

## Environmental Impact of Vehicle Propulsion Systems (67304)

- > ICE characteristics/engine maps
- > Pollutant formation
- > Modern combustion processes fossil/non fossil fuels
- > Exhaust aftertreatment concepts
- > Euro7 emission standards
- > Impact of natural gas and fuel cell powered vehicles
- > Sustainable hydrogen off highway powertrains
- > Adaptation to eFuels (regenerative fuels)
- > Functional safety for regulatory compliance

## Design of Electronic Powertrain Management Systems (67305)

- > Software structure of engine management systems
- > Interaction of power train control and different vehicle control units
- > Design of new or redesign of existing functionalities in engine management systems

## **Vehicle Interior – Simulation and Evaluation (67306)**

- > Fundamentals: human anthropometry and physical ergonomics, vehicle interior standards and package, statistical analyses, Design of Experiments
- > Requirements and development methods for the ergonomic design of the vehicle interior
- > Conceptualization of vehicle interior and its components in an ergonomic way
- > Evaluation of the vehicle interior and usage by the application of appropriate methods
- > Simulation with the digital human modeling software RAMSIS
- > Preparation, conduct and analysis of a customer study

## **Vehicle Acoustics (67307)**

- > Fundamentals: sound, sound-field, parameters and definitions
- > Perception of humans: audibility of airborne noise, perception of structure-borne noise
- > Measurement equipment: sensors, devices and chambers, analysis methods
- > Legislation: pass-by noise test, source analysis, test vehicles
- > Sources, transfer and radiation, reduction measures
- > Psychoacoustics: parameters, measuring and analysis techniques, sound engineering

## **Global Automotive Homologation (67308)**

- > Vehicle homologation process
- > Vehicle type approval
- > Product liability
- > Homologation documentation
- > Main items of existing and in force coming European rulemaking with respect to safety and powertrain items

## **Powertrain Calibration: Propulsion Systems (67309)**

- > Calibration of engine management systems
- > Vehicle calibration
- > Application of rapid SW- Prototyping tools
- > On board diagnostics
- > Testing of control functions in engine management systems

## **Electrified Vehicles Components Modelling (67310)**

- > Mathematical description and modelling of components and transmission
- > Transmission control unit (TCU) development
- > MIL, SIL, HIL, RCP methods in transmission development
- > Transmission application and calibration processes
- > Model based transmission optimization

## **Climate Change Impact on the Automotive Sector (67311)**

- > Knowledge of climate, weather and scientific fundamentals of climate change and consequences in Europe
- > Power generation and distribution for the mobility sector, overview of atmospheric chemistry
- > Basics of weather phenomena close to the road
- > NGO and legislative body handling of climate change consequences
- > Analysis of urban planning processes, view on road infrastructure and design
- > Impact on technical modifications of automotive vehicles and technical adaptation strategies
- > Vehicle assistance and navigation systems: state-of-the-art technology

## **Automotive Systems and Control (AUTO1029)**

- > Describe, investigate and analyse complex systems in engineering and associated issues (using systems thinking and modelling techniques)
- > Develop creative and innovative solutions to engineering problems
- > Comprehend and apply advanced theory-based understanding of engineering fundamentals and specialist bodies of knowledge in the selected discipline area to predict the effect of engineering activities
- > Apply underpinning natural, physical and engineering sciences, mathematics, statistics, computer and information sciences
- > Demonstrate effective team membership and team leadership
- > Assess, acquire and apply the competencies and resources appropriate to engineering activities

## **Advanced Vehicle Dynamics (AUTO1927)**

- > This course will teach how engineers analyze vehicle dynamics in performance, handling and ride modes. Mastery of these techniques will enable to better predict dynamic behaviour of a vehicle, and thus reconcile competing demands inherent in the design of vehicles.

## **Management of Automotive Design and Development (AUTO1024)**

- > Product life-cycle management
- > Global design and communication (e-design)
- > Automobile system design
- > Safety regulations and design for safety
- > Car body design (structural and aerodynamic)
- > Design integration and optimization

## **Research Methods in Engineering (OENG1120)**

- > Development of skills to undertake a comprehensive literature review and research project plans.
- > This course introduces the general principles, methodologies and practices of data collection (both qualitative and quantitative) and analysis in qualitative research, analytics, content analysis, design aspects and research ethics.
- > Data analysis tools will be covered as well as understanding the validity and reliability of data.
- > Development of skills in communicating scientific findings including writing academic publications and presentations.

## Master's Research Project Part 1 & Part 2 (OENG1089/1090)

- > Designed to consolidate and expand knowledge through an in-depth experimental and analytical study of technical and engineering management applications.
- > Work on research projects individually or in small groups
- > In these courses it will be required to plan, manage and complete a research project, conduct a critical analysis of relevant literature, undertake research work to a high level standard of professional engineers and researchers, evaluate and report the research findings.
- > It is a work-integrated project done either in conjunction with industry or in a simulated engineering work environment.

# Kickstart Your Idea

Have you got an idea in the drawer and don't know how to implement it? Kick-start your idea and come see us at the Startup Center. Together, we can vitalise your idea and help it become a success.



[gruenden.fh-aachen.de](http://gruenden.fh-aachen.de)



  
GRÜNDUNGSZENTRUM  
FH AACHEN

## FH Aachen – University of Applied Science and Faculty of Aerospace Engineering

FH Aachen University of Applied Sciences, with its locations in Aachen and Jülich, is one of the biggest and most important universities of applied sciences in Germany. The competences are mainly in the future areas of energy, mobility, and life sciences. The latest research results are directly incorporated into teaching. With a variety of laboratories, wind tunnels, a powertrain laboratory and an astronautic laboratory, FH Aachen is able to teach with a very high practical orientation. A further decisive step is offering international degree programmes. Here, the language of instruction is English. In this context, the cooperation with numerous and significant foreign partner universities of the FH Aachen is particularly attractive.

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## RMIT – University and School of Engineering



Royal Melbourne Institute of Technology (RMIT) is a global university recognised for leadership and innovation in technology, design and enterprise. As a QS 5-Star rated institution, RMIT is ranked as one of the world's leading universities with a strong research record and state-of-the-art facilities and infrastructure. Whether you complete your degree in Australia or on exchange anywhere in the world, RMIT aim to provide students with the best experience possible along with the skills to succeed in their chosen career.

RMIT is one of Australia's top 5 universities for students to go on an international exchange as part of their studies. With campuses in Melbourne and Vietnam as well as access to over 150-plus partner institutions, studying at RMIT puts the world at your fingertips. When you study at RMIT in Melbourne you are part of a vibrant and welcoming university. RMIT has over 100 student clubs, societies and collectives to choose from which are a great way to meet new friends, develop new skills and connect with people who share your interests. You can even start your own club. Safe, multicultural, and voted the world's most liveable city seven years in a row (2017 Economist Intelligence Unit Global Livability Ranking) - Melbourne is a great place to live and study.

RMIT's City campus is in the heart of Melbourne's central business district, close to public transport, accommodation and surrounded by a vibrant food and coffee culture. You can explore Melbourne's beautifully maintained public spaces, a network of laneways, iconic galleries and museums, as well as a lively year-round calendar of sports, music, fashion and cultural events. Melbourne is a stimulating and exciting city to be in.

# FAQ

When can I [apply for the degree programme](#) and how?

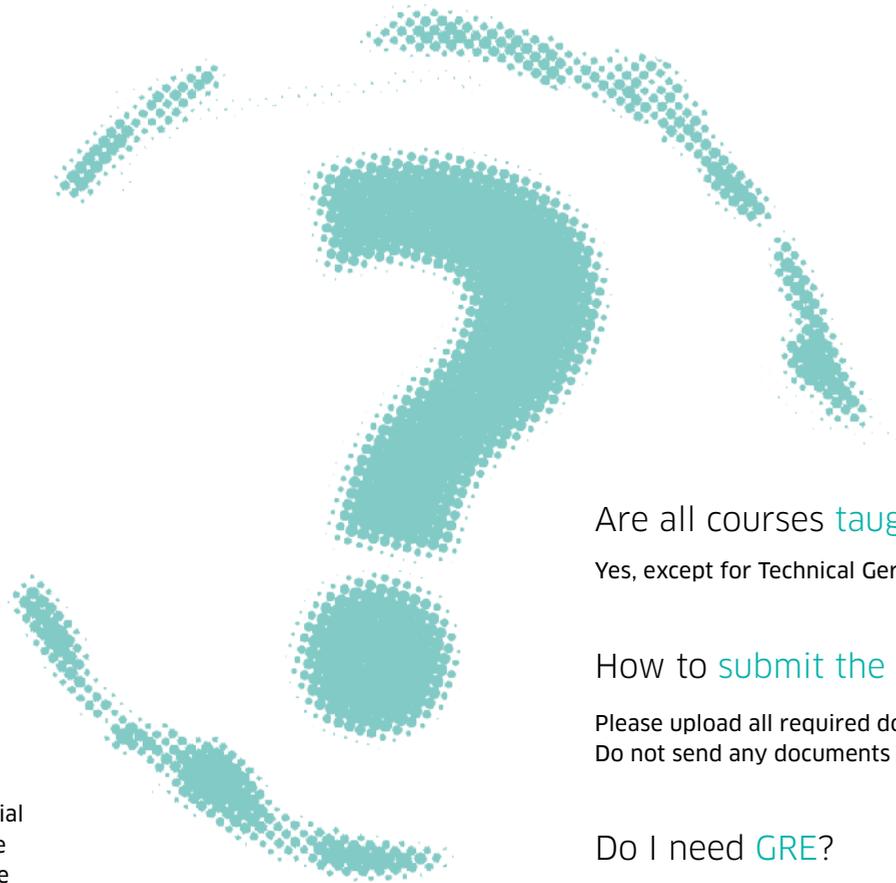
Please apply via our online application portal. It will be opened around four weeks before the deadline for international students.

Do I have to submit an [English language certificate](#)?

In case you are a native speaker or you are able to provide an official statement from your university concerning the fact that your entire undergraduate studies have been taught in English, you do not have to submit TOEFL/IELTS/FCE.

Is it possible to attend a [German language course](#) at the same time as the Master's degree programme and submit the certificate later?

It is only possible for the B1-course. Without the required language certificates at the time of enrolment, your admission will become invalid. There is no possibility to get conditional approval. We do not offer special language courses as preparation for the B1 examination.



Are all courses [taught in English](#)?

Yes, except for Technical German.

How to [submit the documents](#)?

Please upload all required documents during your online application. Do not send any documents postally or via ETS.

Do I need [GRE](#)?

If you have completed your undergraduate studies at a university that is not a member of the Bologna Process, you have to provide GRE. You will find all Bologna participants on the following page: [www.ehea.info/pid34249/members.html](http://www.ehea.info/pid34249/members.html)  
India is not a member of the Bologna Process.

# Organisation

## Any information about

- > duration and start of the degree programme
- > course fee
- > modules' description and list of lectures
- > application documents and deadlines

and any further information will be published on the website.

Please use the following web address to get further information.  
[fhac.de/master-automotive-engineering](http://fhac.de/master-automotive-engineering)

# Addresses

## Faculty of Aerospace Engineering

Hohenstaufenallee 6  
52064 Aachen  
P +49.241.6009 52410  
F +49.241.6009 52680  
[www.luftraum.fh-aachen.de](http://www.luftraum.fh-aachen.de)

## Dean

Prof. Dr.-Ing. Peter Dahmann  
P +49.241.6009 52400  
dekan.fb6@fh-aachen.de

## Head of the Degree Programmes

Prof. Dr.-Ing. Thomas Esch  
P +49.241.6009 52369  
esch@fh-aachen.de

## Degree Programme Coordinator/Advisor

Dipl.-Päd. Corinna Hornig-Flöck  
P +49.241.6009 52428  
master-fb6@fh-aachen.de

## ECTS Co-ordinator of the Faculty of Aerospace Engineering

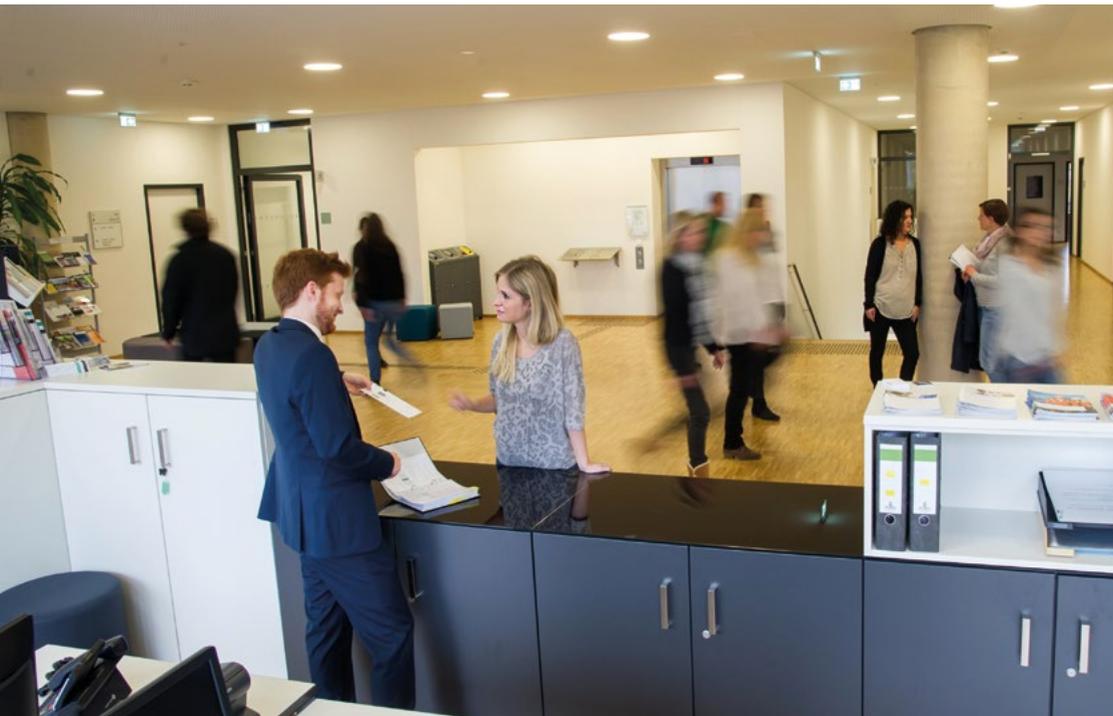
Prof. Dr.-Ing. Marc Havermann  
P +49.241.6009 52427  
havermann@fh-aachen.de

## Student Service Center (SSC)

Bayernallee 11 | 52066 Aachen  
T +49. 241. 6009 51616  
ssc@fh-aachen.de

## Department of International Affairs

Bayernallee 11  
52066 Aachen  
P +49.241.6009 51043/51019/51018  
[www.aaa.fh-aachen.de](http://www.aaa.fh-aachen.de)



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