DAAD Deutscher Akademischer Austauschdienst
German Academic Exchange Service

INTERNATIONAL PROGRAMMES

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Master's degree

Autonomous Driving

Coburg University of Applied Sciences and Arts • Kronach

Overview

Degree	Master of Engineering (MEng)
Course location	Kronach
Teaching language	• English
Languages	Courses are held in English (100%). Supervision of project work is done in English by default, but it can be done in German on request. Participants can choose to write their Master's theses in English or German.
Full-time / part-time	• full-time
Programme duration	3 semesters
Beginning	Winter and summer semester
Application deadline	2 May (one day only) for the following winter semester 15 November (one day only) for the following summer semester
Tuition fees per semester in EUR	Varied
Additional information on tuition fees	The tuition fees only apply to students from non-EU countries.
Combined Master's degree / PhD programme	No
Joint degree / double degree programme	No
Description/content	**Practical and Project-Centred Learning**

Our study programme directly leads to future professional practice. You will work in interdisciplinary teams to develop solutions together and across different disciplines. This will provide you with many skills that will give you a decisive advantage in your future career.

Within your team, you will act independently and actively shape the progress of your team project. The ability to work in a team and communication are essential! You and your team will be in constant exchange.

At any time, you can receive professional input from the professors and employees of the university as well as from the experts of our partner companies.

Study Content

At the beginning of your studies, you and your team will work on a product idea, which you will conceptually develop and refine over the course of two semesters. The six study modules represent a product development cycle that covers all theoretical and practical milestones from the conception phase and analysis of the framework conditions to technical implementation and virtual testing of a real prototype. This is what real practical relevance and consistent project centricity look like.

We use methods of agile project management and human-centred product development.

By teaching the essential study contents, you will ensure the implementation of your team's product ideas. Examples of these study contents include the following:

- **sensors and actuators**
- **vehicle networking**
- **data processing**
- **artificial intelligence and**
- **human-machine interfaces**

In the third semester, you will apply your skills in your Master's thesis, which you will ideally work on together with a company.

Course Details

| Course organisation | The course consists of six sequential modules, each dedicated to a major step in development of autonomous systems.

Module One: User-centred Design and Development Processes

In this module, you are introduced into agile development processes, and you will learn how to work in a team. The team work project is focused on creation of your product idea following a human-centred design approach. A further topic is the introduction to programming.

Module Two: System Architecture and Safety Concept

Based on the product idea, you and your team will create a system architecture and technical requirements. A special focus is on safety of your product. Basics in deep learning and V2X communication are also taught.

Module Three: Sensors for Environmental Perception and Data Fusion

Implementation of your autonomous systems start on the side of perception. You will learn how to use and calibrate sensors, deepen your knowledge in artificial intelligence and get introduced to sensor fusion methods. All of this is directly applied in practice as part of the team work project.

Module Four: Vehicle Connectivity and Localisation

An autonomous system needs to know where it is in order to act properly. In this module, you will gain knowledge about localisation algorithms as well as methods for connecting vehicles. Simulation of traffic systems as well as statistics, advanced deep learning and introduction to

vehicle dynamics complement the module.

Module Five: Navigation and Virtual Safeguarding

The major topic of this module is the navigation of autonomous systems, including SLAM algorithms, path and trajectory planning as well as controller design. A second focus is on virtual safeguarding – you will learn how to test and validate you product using simulation. Additionally, you can specialise into one of your favourite topics by working on an appropriate side project.

Module Six: System Test and Product Launch

In the last module of the course, the goal is to finalise the system in order to show a complete demonstration of the use case. Of course, testing the product is a key challenge. Lectures about launching a product give you important additional insights. You also have the chance to further specialise on a topic in the scientific colloquium.

In all modules, exams are conducted as a portfolio. You will submit reports or marked exercises, and each module finishes with an oral presentation and a demonstration of the current state of the project.

Course-specific, integrated German language courses	Yes
Course-specific, integrated English language courses	No

Costs / Funding

Tuition fees per semester in EUR	1,500 EUR
Additional information on tuition fees	The tuition fees only apply to students from non-EU countries.
Semester contribution	109 EUR
Funding opportunities within the university	No

Requirements / Registration

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Academic admission requirements	- A diploma or Bachelor's degree with an overall grade of at least 2.5 or a final grade with which you belong to the best 60 percent of graduates - A university degree in automotive engineering, mechatronics, information technology / computer science, mechanical engineering, electrical engineering/electronics, physics or related fields, and - Applicants are required to have at least seven semesters (210 ECTS) including a practical study semester (at least 18 ECTS) or six semesters (180 ECTS) without a practical study semester. You can make up for missing competencies in theory or practice within one year after starting the Master's programme with us. - English proficiency (see below)

Language requirements	English proficiency is proven by a relevant mark in one of the following tests: UNIcert® II, TOEFL 550, CBTOEFL 213, IELTS 6.0, or you can prove equivalent knowledge, e.g. by completing a Bachelor's programme entirely taught in the English language.
Application deadline	2 May (one day only) for the following winter semester 15 November (one day only) for the following summer semester
Submit application to	https://www3.primuss.de/cgi-bin/bew_anmeldung_v2/index.pl?Session=&FH=fhc&Email=&Portal=1&Language=en

Services

Possibility of finding part-time employment	Our partner Valeo offers opportunities for student employment on a part-time basis. Other companies in the region offer similar jobs. At the university, you can work as a student researcher.
Accommodation	https://lucas-cranach-campus.de/en/campus/housing-for-students
Career advisory service	Job-matching events
Support for international students and doctoral candidates	• Buddy programme • Help with finding accommodation • Support with registration procedures
General services and support for international students and doctoral candidates	• On-boarding programme • Regular socialising activities • Support in dealing with local authorities

Our Partners
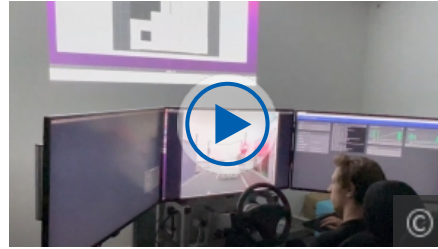
Final Project Presentation

Students present their project results in this video. The project topic was the "teleoperation of autonomous shuttles in exceptional cases".

» more:
https://youtu.be/g4N5B8UN8xo

Coburg University of Applied Sciences and Arts

Students on a bridge in Kronach

Coburg University in Germany is a public university financed by the Bavarian State Ministry of Science and the Arts As its English translation "University of Applied Sciences and Arts" suggests, a "Hochschule" is characterised by practice-related teaching and research as well as a strong practical bias. Its educational philosophy is designed to enable its students to apply their theoretical knowledge and methodological know-how to solving concrete problems in their professional careers.

During their studies, the students at Coburg University are systematically trained to develop those skills. To make sure that students never lose sight of the practical relevance of what they are learning, both full-time and part-time faculty are required to have gained ample experience in leading positions of business and administration.

With the exception of art-related programmes, the standard length of Bachelor's degree programmes is seven semesters, one of which is, as a rule, in an internship.

The practice-oriented approach to teaching is demonstrated by:

- a required internship
- the small size of classes allowing individual attention to be given to students
- lab and field work, simulation games, project-centred education, and field trips
- the faculty's wide range of practical experience

Further details can be found here: https://www.coburg-university.de/about-us/portrait.html.

University location

Our Master's programme is located on the Lucas Cranach Campus in Kronach. The newly created campus in the heart of the city of Kronach offers you opportunities for **learning, tinkering, living, and meeting friends** – with everything in the immediate vicinity. Here you can meet doers, question existing solutions, think new things and actively create them.

Contact

Coburg University of Applied Sciences and Arts
Mechanical Engineering and Automotive Technology

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🌐 Course website: https://www.coburg-university.de/academic-studies/international-master-program/autonomous-driving.html

f https://www.facebook.com/hscoburg

in https://www.linkedin.com/company/81471170

○ https://www.instagram.com/hochschule_coburg/

▶ https://www.youtube.com/user/HochschuleCoburg

Last update 16.11.2024 10:23:28

International Programmes in Germany - Database

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Federal Ministry of Education and Research