

Hochschule
München
University of
Applied Sciences

Munich Summerschool
of Applied Sciences

Engineering for Sustainability

July 5th – August 6th 2021
Munich, Germany



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Why Munich

- High-tech hub (around 22,000 high-tech companies, such as BMW, Apple, Microsoft)
- Rich culture life in international atmosphere combined with Bavarian traditions
- Beautiful nature in and around Munich (Alps, lakes, etc.)
- Safety & comfort – Munich is rated #1 in Germany for quality of life and is one of the safest cities in Europe.

Why HM

- Second largest university of Applied Sciences in Germany with over 18.000 students and over 85 degree programs
- Future-oriented education
- Career success
- International services
- Excellent industry connections

»Coming to Germany was my first extended international trip. I really feel like my eyes were opened to other cultures. I loved the excursions, especially to BMW, and I feel like I learned a lot about engineering and life in general.«

Accommodation and Support

Accommodation will be organized by the coordinating staff upon request. Participants of the program will stay in a hostel near the university in Munich. The accommodation is located in a safe neighborhood in Munich. All amenities and shops are easy to reach. The approximate price per person for 34 nights in a tripple or quad bedroom will be around 1.000 Euros. Please find details about the housing and options on our website.

We guarantee professional assistance by the program coordinator and bilingual German buddies. The buddies will help you to settle in smoothly. They will accompany the field trips, company visits and receptions. Free access to the internet will be provided by the university as well as a welcome package including a Summer School shirt.

Fees

The program fee of € 1,790 covers: tuition for the German Language and Culture class, two subject courses, the official cultural and social program, free internet access at the university and a welcome package. For students from partner universities, the fee is reduced to € 1,650. Accommodation is not included.

Requirements

In order to apply, you should be at least 18 years old. Applicants must provide evidence of a good level of English (at least level B2 in the CEFR, TOEFL iBT 90 or equivalent, or mother tongue), as well as a letter of motivation and a transcript with the most recent grade point average. Please also refer to the prerequisites specified in the course descriptions. The program is intended for advanced undergraduate students in Mechanical Engineering, Automotive Engineering, Electrical Engineering and Industrial Engineering from Germany and abroad. The deadline for applications is March 14th, 2021.

Why MSSAS

Munich Summer School of Applied Sciences (MSSAS) offers in-depth study of engineering and business topics, integrating green issues with a focus on sustainability. Great importance is attached to the practical application using state-of-the-art technology and teaching methods in the courses.

This approach is also reflected in our course related field trips to relevant German companies.

Our “German Language and Culture” course will help you learn every day phrases and immerse in Germany’s history, culture and present life.

Academic Program

The summer school is a five-week program. International students participate in an intensive German Language and Culture course in the first week and continue these studies part-time throughout the program.

Students select two credit subject courses, which are taught in English by multi-national teams of two renowned lecturers from HM Munich University of Applied Sciences, California Polytechnic State University (USA) and the Strascheg Center for Entrepreneurship (Munich). Each subject course covers a minimum of 40 teaching contact hours, including laboratory experiments and simulations. The academic program also includes a number of relevant field trips. Please visit our website for detailed course descriptions.

Due to the Covid-19 pandemic, we might be forced to change our plans of a face-to-face summer school. In this case, we will inform you about an alternative online program, changes in price, course offerings, dates and location. Thank you for your understanding.

Courses offered 2021

German Language and Culture

- Overview of the most important German phrases and grammatical structures
- Vocabulary for day-to-day situations in Germany
- Ability to communicate and read in German
- Basic elements of German culture and its historical roots
- The impact of culture on intercultural behavior

6 ECTS credits (or 4 US-credits)

Field Trips:

- *Munich Documentation Centre for the History of National Socialism*
- *Dachau Concentration Camp*
- *Memorial Site, Representation of the European Commission*

Smart Vehicles

- Overview of smart vehicles
- Autonomous driving vehicles and their contribution to a sustainable mobility
- Introduction to vehicle dynamics
- Image Processing for autonomous vehicles
- Defining simple manoeuvres with the model car
- Test and competition with the model car

4 ECTS credits (or 3 US credits)

Field trip: e.g. ARGO or VEONEER

The Potential of Renewable Energies – can we satisfy our thirst for Energy in a sustainable way?

- Overview of our energy consumption and the energy production through renewable sources
- Understanding the subject of energy and estimating the potential of renewable energies by using simple Physics
- Identifying green wash
- Finiteness of fossil energy
- The impact of fossil energy on our world
- Estimates for the potential of renewables in the USA and in Germany
- Setting up a useful agenda for the use of renewable energies in the USA and in Germany

4 ECTS credits (or 3 US credits)

Field Trip: please check our website

Engineering of Sustainable Energy Systems

- The need for sustainable energy systems and their architecture
- Introduction to Systems Engineering approaches
- Models and simulations of energy grids
- Key components of sustainable energy systems
- Sustainable energy net integration and engineering solutions

4 ECTS credits (or 3 US credits)

Field Trip: please check our website

Crashes and Impacts: Analysis, Techniques and Biomechanics

- Basic Crash Dynamics
- Methods for discretization in time
- Nonlinearities in solid mechanics
- Methods/Requirements for numerical treatment of highly nonlinear dynamic problems
- Application of methods learnt with a commercial code
- Extracting/Postprocessing injury relevant data

4 ECTS credits (or 3 US credits)

Field Trip: please check our website

Hydraulic & Pneumatic Systems

- Overview of hydr. and pneum. systems and their applications
- Properties of hydraulic fluids and their flow characteristics
- Design of hydr. components incl. pumps/motors, actuators, valves
- Hydraulic system design incl. component selection
- Analysis of system efficiency and energy consumption
- Hands on experimentation and testing of hydraulic components
- Speed and position control experiments with real-time control

4 ECTS credits (or 3 US credits)

Field Trip: please check our website

Sustainable Entrepreneurship

- Entrepreneurship in theory and practice
- Implementation of business models
- Development and growth of the enterprise
- Interdisciplinary teamwork

4 ECTS credits (or 3 US credits)

Field Trip: please check our website

Cultural Program

A broad and attractive cultural program makes your stay an unforgettable experience.

We will offer some (mandatory) events and provide ideas for further excursions and sightseeing. The mandatory cultural program includes i.a. the following excursions:

- A guided tour of Munich with our German teachers and a visit to a typical beer garden
- Field trip to BMW (guided factory tour)
- A day trip (to a Bavarian lake, castle or to the mountains)
- City Hall Gallery or Olympic Park/Olympia Memorial Site

Meeting German students in class and afterwards provides unique insights into German every-day life. Joint studies with participants from all over the world complete an intercultural experience. The program will be complemented by receptions and get-togethers.

Contact

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HM Hochschule München
University of Applied Sciences
was founded in 1971. Today it
is the largest University of
Applied Sciences in Bavaria
and the second largest in
Germany offering more than
70 degree programs. The
university maintains excellent
contacts with companies
and businesses in and around
Munich and Germany, and
has approximately 200 partner
universities around the globe.