



## Requirements

The summer school is designed for advanced undergraduate Engineering students (please also refer to the prerequisites specified in the course descriptions). 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.

## 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 € 1650. The deadline for applications is March 15, 2015. Accommodation is not included.



## Academic Program

Munich Summer School of Applied Sciences offers in-depth study of engineering and business topics, integrating green issues with a focus on sustainability. The **courses focus on practical application** using **state-of-the-art technology** and **teaching methods**.

The program is intended for advanced undergraduate students in Mechanical Engineering, Automotive Engineering, Electrical Engineering and Industrial Engineering from Germany and abroad.

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 courses, which are taught in English by multi-national teams of two renowned lecturers from 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.

*»This program was an incredible cultural and learning experience and I would recommend it to anyone.«* Alex, Pennsylvania State University

## Courses

### 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
- Three related field trips: White Rose Memorial Site, Dachau Concentration Camp Memorial Site, Representation of the European Commission
- **6 ECTS credits (or 4 US-credits)**

### 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
- Field trip: Visiting BMW World and the plant (guided tour)
- **4 ECTS credits (or 3 US credits)**

### Combustion Engines

- key aspects of internal combustion (IC) engine performance analysis
- fuels and combustion analysis
- Dynamic effects on volumetric efficiency
- laboratory exercise how the real engine behaves
- analyze the emission composition for IC-engines
- **4 ECTS credits (or 3 US credits)**

### Smart Environments

- Definition of a Smart Environment
- Introduction and assessment of different existing technologies
- Setup of a simple Smart Environment
- Use relevant methods for representing knowledge
- Reasoning about knowledge in Smart Environments
- Apply context-information to improve the reasoning process
- **4 ECTS credits (or 3 US credits)**

### Gas Turbines

- Thermodynamics and basic working principles of gas turbines
- Calculation of temperatures and other process parameters
- Thermodynamics of isothermal and adiabatic combustion
- Live operation of a 75 kW small scale industrial gas turbine testrig
- **4 ECTS credits (or 3 US credits)**

### Embedded Systems

- Fundamentals of embedded systems hardware and firmware design
- C166 Architecture of a microcontroller
- Interface hardware components to microprocessor-based systems
- Teamwork on design and development process
- **4 ECTS credits (or 3 US credits)**

### Sustainable Entrepreneurship

- Entrepreneurship in theory and practice – creativity, holistic perspective, knowledge and teamwork
- Implementation of business models (feasibility study, business plan, marketing and sales, finance, industrial property rights)
- Development and growth of the enterprise
- Interdisciplinary teamwork
- **4 ECTS credits (or 3 US credits)**

## Cultural Program

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

The cultural program includes the following field trips:

- a guided tour of Munich by bike and a visit to a typical beer garden
- field trips to the BMW World including a plant tour
- a day trip to the beautiful Herrenchiemsee New Palace on an island in Lake Chiemsee with a boat trip and a Bavarian lunch
- trips to the “White Rose Memorial Site”, to the “Dachau Concentration Camp Memorial Site” and to the representation of the European Commission in Munich (as a part of the German Language and Culture class)

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.

Munich 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 business in and around Munich and Germany and with about 240 partner universities around the globe.



Foto: Allianz Arena

## Accommodation and Support

Accommodation will be organized by the coordinating staff upon request. Participants of the program will stay in a youth hostel or in a budget apartment in downtown Munich. The accommodations are located in **quiet and safe neighborhoods**. All amenities and shops are easy to reach. Please find details about the housing and options on our website.

Participating students will get a carefree travel package. We guarantee professional assistance by the program coordinator and bilingual German buddies. There is a **pick up service** from Munich **airport or central station**. The buddies will help you to settle in smoothly. They will also accompany the field trips, company visits and receptions. **Free access to the internet** and to the library will be provided by the university as well as a **welcome package** including a Summer School shirt.

*»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.«*

Elise, California Polytechnic State University

## Application

The deadline for application is **March 15, 2015**. Places are limited. Please be aware that early applications will be favored. The application form can be downloaded at [www.hm.edu/summerschool](http://www.hm.edu/summerschool). Please send it to Munich University of Applied Sciences, either via email, fax or post.

## Contact

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# Engineering for Sustainability

**July 6 – August 7, 2015**  
**Munich, Germany**

## Munich Summer School of Applied Sciences



Foto: TAM



## Add Munich to your Résumé!

Munich is one of the leading economic, technological and scientific hubs in Germany. Companies including Siemens and BMW have their headquarters in the city. Other global players such as Apple and Microsoft have their German branch offices here. They all benefit from our **location in the heart of Europe**.

The historic city of Munich is over 850 years old. It is a vibrant center of **cultural activity** – a city of theater and music, literature, film, museums and festivals. Situated close to the Alps, the city is a great starting point for almost unlimited outdoor activities. And for spectator sports – “Allianz Arena” with soccer club Bayern Munich’s home-games is just around the corner.

Munich and the surrounding area are well known for a high standard of living. In Munich, tradition and innovation, industry and science, cultural and touristy attractions all contribute to the outstanding quality of life the city offers. In fact, Munich ranks among the top five most livable cities in the world (source: Mercer Quality of Living Survey 2012). Numerous surveys and statistics regularly emphasize not only Munich’s economic power, the variety of recreational opportunities or its excellent public transportation system but also its exceptionally low crime rate.

Come and experience it for yourself, and enjoy your stay in one of Germany’s most **beautiful and safe** cities!

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