Social and Cultural Program

Meet other students, get to know Munich and take a trip to Germany's capital!

Munich City Tour & Visit to Beer Garden

Weekend Excursions:

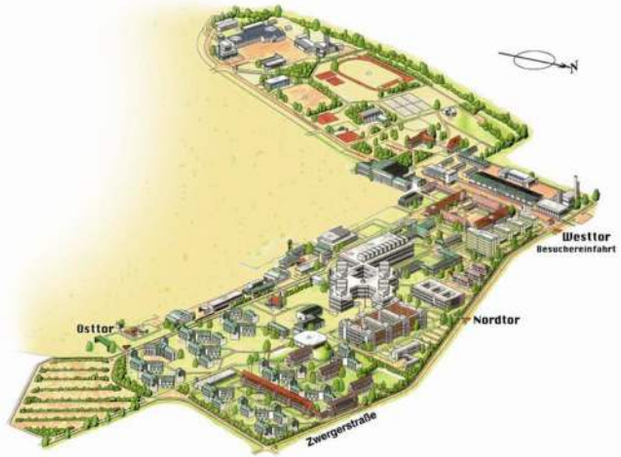
Hiking in the Alps

Berlin Excursion

Castle Neuschwanstein

Berchtesgaden and the Königssee

(partly sponsored by the German Academic Exchange Service and IT IS GmbH)



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Summer Internship Program 2016

RESEARCH IN MUNICH

June 6 – August 08

der Bundeswehr Universität München

Last update: November 2015

Application

The Bundeswehr University Munich is pleased to invite applications for its Summer Internship Program from June 1 – July 31, 2016.

The program is open to all advanced undergraduate and graduate students who enrolled in a course of study related to civil engineering, mechanical engineering, electrical engineering, computer science or related study programs.

No knowledge of the German language is required.

Successful applicants will live in a university building not far from campus, from the library, dining hall, and fitness center, as well as the laboratories in which they will be working.

If you are interested in applying, please contact your university's study abroad office. See more at: https://global.arizona.edu/study-abroad/program/research-munich#sthash.sCY2sDEK.dpuf.

Application Deadline: February 15, 2016

University Campus

The campus is located just outside of Munich and contains all of the facilities students need in their day-to-day lives. These include a grocery store, tennis courts, a swimming pool, sauna facilities, a beer garden, and a student restaurant.
The city of Munich offers a wealth of opportunities to explore art, culture, history, and athletics. Its location and transportation connections make it easy to plan weekend excursions to the Alps or to other European cities.

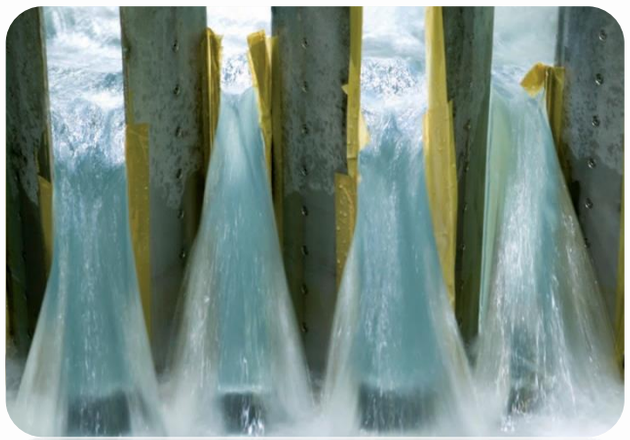
Internships Offered

► Institute of Engineering Mechanics and Structural Mechanics / Department of Civil Engineering and Environmental Sciences

Laboratory for Computational Engineering, Research Center RISK

2-3 internship positions available (Prof. Gebekken)

The Institute of Engineering Mechanics and Structural Mechanics and its Laboratory for Computational Engineering focuses on numerical simulation in structural engineering. Fields of interest are: safety of structures and infrastructures, earthquake engineering, structural dynamics, protective structures, explosion, contact detonation, blast, impact, high-speed dynamics, mitigation of multiple threats, development of protective systems, material and fracture mechanics, rapid bridge classification, explosion safety of steel-glass-facades, numerical experiment design, mitigation of natural threats (flood, heavy storms, rock fall, etc.). Experiments are carried out in cooperation with partners.



► Laboratory for Hydromechanics and Hydraulic Engineering / Department of Civil Engineering and Environmental Sciences

1 internship position available (Prof. Malcherek)

The Institute of Hydromechanics and Hydraulic Engineering currently works on several projects comprising rheological studies, scientific analysis of a small hydro power plant, and research on a mudflows simulation model.

► Institute for Construction Materials / Department of Civil Engineering and Environmental Sciences

1 internship position available (Prof. Thienel)

The computer tomography is an excellent technique for non-destructive material tests. This method enables you to reckon cross sections wherever you want in your scanned test specimen. And pore size and distribution become visible and the total pore volume can be determined. During the internship you will scan different building materials (e.g. lightweight concrete, normal concrete, autoclaved aerated concrete) with the CT scanner and reconstruct the material models in 3-D. The so obtained material models should be analyzed with respect to pores (size, distribution, volume) and cracks (maybe also after testing them in compression). Additionally a comparison can be made between the results of the total pore volume obtained with the CT-technique and the mercury intrusion porosimetry.

If there is still time left for further studies, interns are welcome to analyze correlations between pore volume and other material properties (e.g. elastic modulus, compressive strength, permanence).

► Institute of Electrical Drives and Actuators / Department of Electrical Engineering and Information Technology

4 internship positions available (Prof. Gerling)

In the field of "Electrical Drives and Actuators" detailed knowledge of the system under consideration is a key for success. Therefore, system analysis and system design are in the focus of our activities. This means that electromagnetic power converter (motor/generator/actuator), power electronics and control have to be regarded simultaneously to come to an overall optimum (rather than optimizing single components). Depending on the needs of this application, the optimum drive system is chosen. Consequently, the electromagnetic device (motor/generator/actuator - as the key component of any drive system), the power electronics topology and the control circuitry are designed. Specialized solutions are our favorite tasks. Beside the theoretical analysis and design of drive systems, some very special (partly worldwide unique) test-benches are available for experimental investigation and validation.

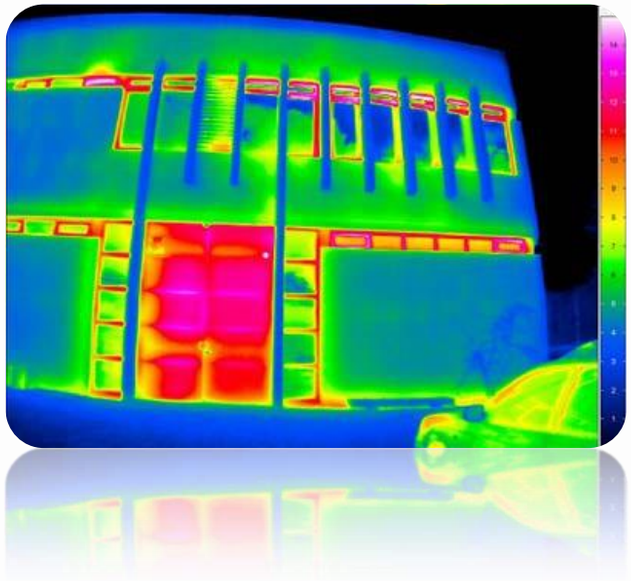
Possible tasks of the internship comprise:

- Simulation of electrical drive components with Finite Element Software or MatLab
- Programming of controllers
- Measurement of electrical drives in the lab

► Institute of Plasma Technology and Mathematics / Department of Electrical Engineering and Information Technology

4 internship position available (Prof. Schein)

The Lab for Plasma Technology team investigates plasma-material interactions for industrial and aerospace applications. Gas Metal Arc Welding, Plasma Cutting, Thermal Spray and Electric (Space-) Propulsion systems are the focus of the ongoing research. Interns will be involved at all levels from construction to operation of experimental systems with an emphasis on learning new useful skills for future employment.



► Chair of Thermodynamics / Department of Mechanical Engineering

2 internship positions available (Prof. Lecheler)

The institute offers student projects in the area of renewable energy and computational fluid dynamics (CFD), i.e.

- Geothermal heat and power generation
- Solar heat and power generation
- Validation and application of ANSYS-CFX to fluid and heat transfer problems

Available lab equipment includes:

- Climate chamber (size 3x3x2m, temperature range - 30°C to + 40°C, humidity variation)
- High resolution thermography camera
- Modern measurement equipment for mass and heat transfer
- Computer work stations and licenses for CFD calculations
- Several demonstration solar heat and power plants

► Institute for Technical Informatics / Department of Computer Science

Chair of Communication Systems and Network Security, Research Center CODE

2 internship positions available (Prof. Dreo Rodosek)

Information and communication technology (ICT) permeates all areas of modern society and is the driver of innovation in business and research. This ubiquity has already led to strong dependencies in the public and private sectors. The security of ICT as well as the defense against cyber-attacks is an essential challenge.

The Research Center Cyber Defense (CODE) brings researchers from different scientific disciplines across faculties together and integrates experts from industry and public service. CODE holistically and interactively approaches technical innovations for the protection of data and systems, anomaly detection, smart attacks, security of mobile devices, critical Infrastructures for various application areas such as automotive, logistics and energy.

► Institute of Operations Research / Department of Computer Science

Research Center COMTESSA

2 internship positions available (Prof. Pickl)

The Department of Computer Science at the Research Center COMTESSA offers student research projects in the area of Operations Research:

- Modelling, simulation and optimization of complex systems
- Multi-agent models / discrete event simulation
- Game theory and experimental design
- System dynamics and strategic planning

► Institute for Lightweight Structures / Department of Aerospace Engineering

1-2 internship positions available (Prof. Rapp)

Due to their excellent strength and stiffness properties, carbon fibre reinforced materials (CFRP) are the most suited materials for all kinds of lightweight structures. More than 50 percent of the structural mass of the new Boeing 787 and Airbus A350 aircrafts consists of these "black" materials. Since last year, carbon fibres are in use even in the automotive industry on a bigger scale, e.g. in the brand new electric cars BMW i3 and BMW i8. At the Institute for Lightweight Structures we solve specialized problems concerning structural design and analysis of these "black" structures in theory and via hands-on experiments. The institute is equipped with a big laboratory where all the structural tests are performed.

Questions associated with your internship are, for example:

- How to transfer high loads into thin-walled structural components made of CFRP?
- What are the friction properties of CFRP when combined with other materials?
- How does creeping of CFRP influence load transfer in a bolted joint?
- What is the strength of torsional tubes made from CFRP by using different manufacturing processes?

► Institute of Fluid Mechanics and Aerodynamics/ Department of Aerospace Engineering

up to 4 internship positions available (Prof. Kähler)

Our research focuses on experimental fluid mechanics, reaching from microfluidics to airplane aerodynamics. The facilities of the Institute comprise several wind tunnels, including a supersonic tunnel, as well as a well-equipped microfluidics lab with state-of-the-art microscopes. The institute is one of the leading developers of PIV (particle image velocimetry) and PTV (particle tracking velocimetry) techniques, including challenging three-dimensional flow measurement methods. Thus, we can offer fascinating internship opportunities in the following fields:

1. *Microfluidics* (1-2 positions available): Microfluidics investigates flow phenomena in the smallest scales. In this internship you will learn how to use microscopes and how to set up a micro-scale experiment. At the end of your work you will be able to measure three-dimensional flow fields in micro channels.
2. *Turbulence Research* (1-2 positions available): Turbulence research is a fascinating and challenging topic. To this day, turbulence is not fully understood, and thus numerous research activities are devoted to this field. This internship gives you an insight on experimental techniques to capture turbulent flows.
3. *Particle Imaging Techniques* (1-2 positions available): Particle imaging techniques, such as PIV and PTV, are powerful tools for a comprehensive flow analysis. Not only do these methods provide velocity fields with excellent resolution, but also related information, like wall shear stress, turbulence intensity, and many others. In this internship you will get an overview of different particle imaging techniques. You will have the possibility to measure three-dimensional, macroscopic flow fields during your stay.

► Institute of Mathematics and Informatics / Department of Business Administration

2 internship positions available (Prof. Finsterwalder)

At Prof. Finsterwalder's institute students have the opportunity to take part in research activities related to real-time simulation and animation of mechatronic systems, interoperability of flight simulators, applications of embedded systems as well as computer vision for robotic applications. Industry partners include BMW, Eurocopter, IABG, as well as numerous robotic firms.