

# Teaching

## Courses

Our courses encompass the entire field of NDT and a wide range of courses including engineering science, physics, geophysics, architecture and medical engineering.

Our courses can be found under the following link:



## Disciplines

- Civil engineering
- Mechanical engineering
- Aerospace engineering

## Student projects

- Master theses
- Bachelor theses
- Term projects
- Research assistantships (Hiwi)



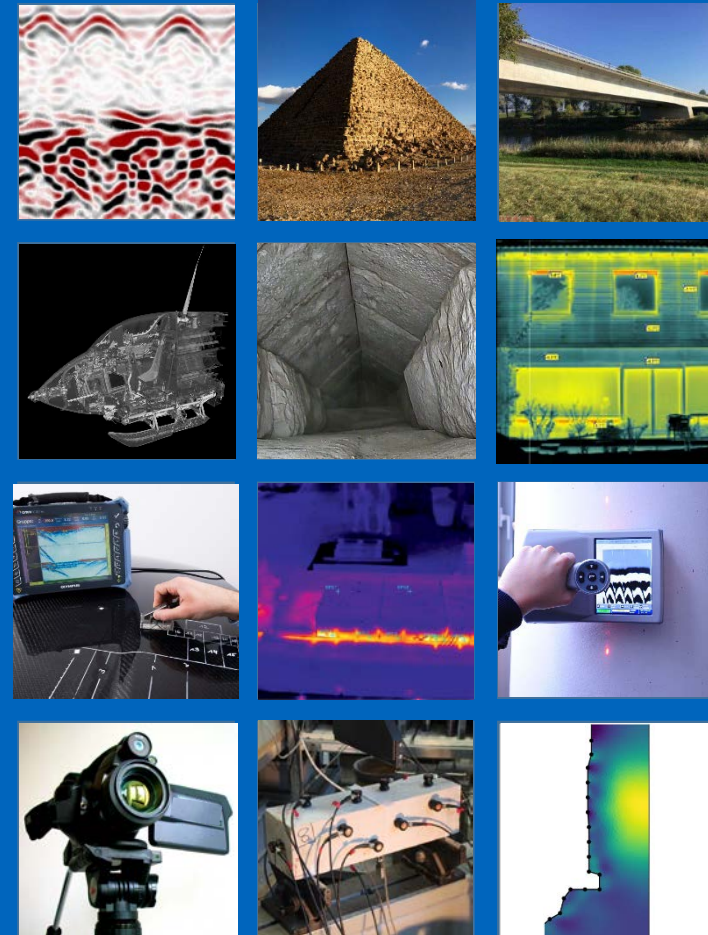
# Research

## Methods

- Ultrasound
- Air-coupled ultrasound
- Acoustic emissions
- Ground penetrating radar
- Microwave techniques
- Infrared thermography (active/passive)
- Vibration analysis
- Modal analysis
- Resonance spectroscopy
- Radiography
- X-rays computed tomography
- Eddy current testing
- Video endoscopy
- Numerical simulation
- Machine learning
- Data processing techniques

## Fields

- Inspection of civil engineering structures
- Structural health monitoring
- Mechanical and aerospace engineering
- Biomedical engineering
- Additive manufacturing
- Quality control
- Preservation of cultural heritage
- Archeological forensics



Chair of  
Non-destructive  
Testing

# Services

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You have a problem but you don't know the right analysis method? Have a look at this page to find out more.

## Material characterization

- E-modulus
- Shear modulus
- Bulk modulus
- Porosity
- Density

## Delamination detection

- CFPR composites

## Crack detection

- Metal
- Concrete
- Synthetic materials

## Modal testing

- Natural frequencies
- Damping ratios
- Mode shapes

## Void detection

- Inclusions in metals
- Gravel pockets in concrete

## Reinforcement localization

- Rebar detection
- Prestressing tendons

## Hidden object detection

- Cables
- Pipelines

## Heat flow analysis

- Process heat
- Building insulation

## Moisture detection

- Water damages

## Internal imaging

- Medical examinations
- Exhibits in museums
- Historic cars, airplanes
- Batteries

## Visual inspections

- Video endoscopy

## Sediment inspection

- Pipelines
- Tanks

## Archeological examinations

- Buried objects
- Hidden internal structures
- Ditches, dams, walls

## Structural health monitoring

- Wind turbine monitoring
- Bridge monitoring
- Hydro dam monitoring

## Numerical modelling

- Finite element modelling
- Wave propagation
- Digital twins
- 2D and 3D electrical resistivity tomography

# Pricing

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Our prices are calculated based on the service specifications of the materials testing department.  
[www.ed.tum.de/mpa-bau/leistungsverzeichnis](http://www.ed.tum.de/mpa-bau/leistungsverzeichnis)

# Consulting

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If you haven't found what you were looking for, write us an email to inquire about it.

# About us

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Our research and teaching activities focus on the material characterization based on non-destructive testing (NDT). NDT is an interdisciplinary field and our staff members have backgrounds in civil, mechanical, medical, and aerospace engineering, as well as physics, and geophysics. We specialize in the testing of newly developed materials and the automated evaluation of large amounts of data based on machine learning and other numerical methods. Many of our research projects are in cooperation with well-known companies from the automotive, aviation and energy technology sectors. Our main location is in Garching, with branches in Pasing and Garching-Hochbrück.

# Career

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We are constantly searching for Hiwis, PhD Candidates, Technicians, and administrative staff. Get in touch to find out more!

# Contact

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