Vorlesungsverzeichnis

English-taught courses of the Faculty

Sommer 2022

Stand 30.11.2022

English-taught courses of the Faculty

202002 Earthquake engineering and structural design (L + E + P)

J. Schwarz, L. Abrahamczyk, C. Kaufmann, S. Beinersdorf Veranst. SWS: 6
Vorlesung

1-Gruppe Mo, wöch., 17:00 - 18:30, Marienstraße 7 B - Projektraum 301, NHRE - Group A+B
2-Gruppe Mo, wöch., 17:00 - 18:30, Marienstraße 7 B - Projektraum 302, NHRE - Group C+D
3-Gruppe Do, wöch., 17:00 - 18:30, Marienstraße 7 B - Projektraum 301, NHRE - Group B+C
Mo, Einzel, 17:00 - 18:30, Marienstraße 13 C - Hörsaal B, Lecture, 11.07.2022 - 11.07.2022
Do, wöch., 13:30 - 16:45, Marienstraße 13 C - Hörsaal B, Lecture

Beschreibung

Students are trained and qualified in tasks of earthquake engineering, natural hazard and risk determining parameters. Students will be able to process input data, to realize design decision for structures of different building type and risk potential, to apply modern building codes and design concepts, to develop earthquake resistant structures and to evaluate structural design.

Earthquake engineering

Seismic Code development and generations; simplified analysis methods; design of structures and regularity criteria for earthquake resistance; performance and experience-based design concepts; rules for engineered buildings (R/C, steel, masonry) and non-engineered buildings; interaction effects between structure and soil, equipment and filling media; special and high risk structures

Structures in Earthquake Regions

Description of National code development; recent code situation; determination of seismic forces for an idealized RC frame system; comparison of different international code levels

Design of RC frames with masonry infill walls in earthquake regions: Application of modern software tools

Training of modelling and calculation with different software tools; interpretation of structural systems in terms of earthquake resistance design (ERD); design and analysis of structural systems for given and modified building layouts; comparison of the results with outcome of damage surveys. Tools: ETABS, SAP2000

Voraussetzungen

recomended module "Primary Hazards and Risks" NHRE

Leistungsnachweis

1 written exam

”Earthquake engineering” / 180 min (67%) / **SuSe** + WiSe

1 Project report + Project presentation

”Structures in Earthquake Regions/Design of RC frames” /

(33%) / **SuSe**

202003 Geo- and hydrotechnical engineering - Part: "Flood hazard and vulnerability assessment" (L + E)

H. Maiwald Veranst. SWS: 3
Vorlesung

Mi, wöch., 09:15 - 10:45, Marienstraße 13 C - Hörsaal B, Dates by arrangement
Do, wöch., 11:00 - 12:30, Marienstraße 13 C - Hörsaal B

Beschreibung

The students should be able to apply the strategies and methods to arbitrary engineering problems in the given fields. To fix the theoretical background the student has to apply the methods independently at given tasks during several projects.

Flood Hazard and Vulnerability Assessment

Flood Management; Fundamentals of flood defence; Management of low-lying areas; Design of river dikes, channels and dams; Design concepts for the defence of structural objects and buildings; Forecasting, management and maintenance in flood defence; Hydrology, hydraulic calculations, flood routing; Characteristics of tsunami action, forces and loads on structures; Structural damage and loss prediction, damage scenarios; Re-interpretation of recent events.

Bemerkung

Vorlesungen in englischer Sprache "Flood hazard and vulnerability assessment"

Leistungsnachweis

1 written exam

”Flood Hazard and Vulnerability Assessment” / 90 min (50%)

/ **SuSe** + WiSe

202004 Exam: Multi-hazard and risk assessment

J. Schwarz, S. Beinersdorf, H. Maiwald
Prüfung
Do, Einzel, 09:00 - 10:30, Marienstraße 13 C - Hörsaal D, 28.07.2022 - 28.07.2022

Beschreibung

The students will be familiar with the probability of natural hazard and risk determining parameters. They will be able to recognize procedures of single and multi hazard assessment and to process input data and to apply tools to study areas. Students will be introduced in further advanced geotechnologies and existing or on-going research as well as global projects conducted by GFZ.

Hazard Assessment and Applications

Primary input and output parameters for EQ (and other natural) hazard; Earthquake statistics and occurrence probability; Methodology of seismic hazard assessment; Seismicity models; Examples of seismic hazard and risk studies; Synopses of natural hazards; procedures and developments in multi-hazard assessment; Case studies of multi-hazard, vulnerability and risk considerations.

Workshop

”Natural Hazards and Advanced Geotechnologies” --> due to the current situation, we will be not able to conduct the excursion - this part will be replaced by: Multi-hazard study of your home country and building stock survey

Compilation of EQ hazard-related data

Treatment of long term seismicity data files; elaboration of earthquake data to get harmonized input for PSHA; earthquake catalogues (for the countries of the participants and adjacent regions); data pre-processing; Hazard Description for the Project regions

Excursion to GeoResearchCenter Potsdam --> the recent situation might allow to have the excursion this year

Bemerkung

In this course 28 students can take part. **It is compulsory for the DAAD-scholarship holders of NHRE intake 2021.** There will be an introduction to the module at April 4th, where everybody interested can participate.

If you are interested to take part in the course, please write a **proposal** why you are interested and what are the major problems in your country related to multi-hazard that you identified yourself. Please **submit this to silke.beinersdorf@uni-weimar.de until April 4th, 2022**. We will inform you about the decision until April 8th, 2022.

The excursion to Potsdam might take place this semester.

As soon as you are accepted, you will be enroled to the moodle-room.

Voraussetzungen

recommended module "Primary Hazards and Risks" (NHRE)

completion of the module "Geographical information systems (GIS) and building stock survey" (NHRE) or basic knowledge of GIS-Systems is also recommended

Leistungsnachweis

1 written exam

”Multi-Hazard and risk assessment ”/ 90 min

(50%) / **SuSe** + WiSe

1 Project report (SYMULTHAN)

(50%) / **SuSe**

202004 Multi-hazard and risk assessment (L + E)

J. Schwarz, S. Beinersdorf, N. Hadidian Moghaddam, P. Hasan, H. Maiwald Veranst. SWS: 4

Vorlesung

Mo, wöch., 15:15 - 16:45, Marienstraße 13 C - Hörsaal B
Di, wöch., 13:30 - 15:00, Marienstraße 13 C - Hörsaal B

Beschreibung

The students will be familiar with the probability of natural hazard and risk determining parameters. They will be able to recognize procedures of single and multi hazard assessment and to process input data and to apply tools to study areas. Students will be introduced in further advanced geotechnologies and existing or on-going research as well as global projects conducted by GFZ.

Hazard Assessment and Applications

Primary input and output parameters for EQ (and other natural) hazard; Earthquake statistics and occurrence probability; Methodology of seismic hazard assessment; Seismicity models; Examples of seismic hazard and risk studies; Synopses of natural hazards; procedures and developments in multi-hazard assessment; Case studies of multi-hazard, vulnerability and risk considerations.

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Voraussetzungen

recommended module "Primary Hazards and Risks" (NHRE)

completion of the module "Geographical information systems (GIS) and building stock survey" (NHRE) or basic knowledge of GIS-Systems is also recommended

Leistungsnachweis

1 written exam

”Multi-Hazard and risk assessment ”/ 90 min

(50%) / **SuSe** + WiSe

1 Project report (SYMULTHAN)

(50%) / **SuSe**

204018 Structural parameter survey and evaluation (L + E + P)

G. Morgenthal, V. Rodehorst, R. Illge, S. Rau, T. Gebhardt Veranst. SWS: 4.5

Vorlesung

Fr, Einzel, 11:00 - 12:30, Marienstraße 13 C - Hörsaal B, 03.06.2022 - 03.06.2022
Fr, Einzel, 11:00 - 12:30, Marienstraße 13 C - Hörsaal B, 17.06.2022 - 17.06.2022
Fr, Einzel, 11:00 - 12:30, Marienstraße 13 C - Hörsaal B, 15.07.2022 - 15.07.2022
Do, wöch., 09:15 - 10:45, Marienstraße 13 C - Hörsaal B
Fr, wöch., 09:15 - 10:45, Marienstraße 13 C - Hörsaal B
Fr, unger. Wo, 11:00 - 12:30, Marienstraße 13 C - Hörsaal B
Fr, unger. Wo, 13:30 - 15:00, Marienstraße 13 C - Hörsaal B
Fr, gerade Wo, 13:30 - 15:00, Marienstraße 13 C - Hörsaal B

Beschreibung

The students will be familiar with methods to determine properties of structural systems by means of modern measurement techniques. They will be familiar with the concepts, the application and the limitations of these techniques. They understand the data obtained and the methods to condition, analyse and interpret the data to extract information about structures and structural members and components. They will be able to apply

the concepts to develop measurement setups and analysis procedures to problems encountered in structural engineering.

Signal Analysis

Trigonometric polynomials (TP); amplitude-phase and complex representation; approximation of arbitrary periodic functions by TP using method of least squares, calculation of Fourier coefficients and error estimation; Fourier series. Discussion of spectra and Fourier transform and its basic properties; Convolution and its properties and applications; random variables and central limit theorem; applications of Fourier transforms such as filtering of signals and solving differential equations

Sensor-based Monitoring and System Analysis

Types and principles of sensors; important sensor properties; data acquisition techniques; spectral and stochastic analysis of sensor data; properties of structural systems important in experimental testing and structural health monitoring; relevant limit states; structural analysis, modelling and model calibration; applications to static and dynamic response, load determination, physically nonlinear structural behaviour and optimization of sensor system setups

Geo-spatial Monitoring

Preparation and planning of three-dimensional measurement tasks; application of tacheometry, satellite-based positioning (GNSS), terrestrial laser scanning and photogrammetry for monitoring; image-based sensor orientation and surface reconstruction; spatial transformations, georeferencing, distance measures, pointcloud registration and geometric deformation analyses

Voraussetzungen

Primary hazards and risks

Applied mathmathics

Leistungsnachweis

1 written exam

”Structural parameter survey and evaluation ”/ 120 min

(100%) / **SuSe** + WiSe

205007 Modelling of steel structures and numerical simulation (L + E)

M. Kraus, S. Ibañez Sánchez, S. Mämpel Veranst. SWS: 4

Vorlesung

1-Gruppe Mo, wöch., 11:00 - 12:30, Marienstraße 7 B - Projektraum 301, Exercise
1-Gruppe Mi, wöch., 07:30 - 09:00, Marienstraße 7 B - Projektraum 301, Exercise
2-Gruppe Mo, wöch., 11:00 - 12:30, Marienstraße 7 B - Projektraum 302, Exercise
2-Gruppe Mi, wöch., 07:30 - 09:00, Marienstraße 7 B - Projektraum 302, Exercise
Mo, wöch., 11:00 - 12:30, Marienstraße 13 C - Hörsaal B, Lecture
Mi, wöch., 07:30 - 09:00, Marienstraße 13 C - Hörsaal B, Lecture

Beschreibung

The students will be familiar with skills and expertise in the field of nonlinear structural analyses. Extensive knowledge of theoretical basics and modern modelling methods including numerical representations are the aim of the course. The students will acquire skills in handling advanced tools for the analysis and the design of structures.

Design of steel structures using finite element methods; basics of the design; modelling of structures and loads; nonlinear material behaviour, numerical analyses of steel-members and structures regarding geometric and physical nonlinearities; stability behaviour of members including flexural and lateral torsional buckling

Leistungsnachweis

1 Project report

”Modelling of steel structures and numerical simulation” (0%) / **SuSe**

1 written exam

”Modelling of steel structures and numerical simulation”/ 120 min (100%) / **SuSe** + WiSe

205013 Structural engineering - Advanced systems (L)

M. Kraus, S. Ibañez Sánchez Veranst. SWS: 3
Vorlesung
Mo, wöch., 13:30 - 15:00, Marienstraße 13 C - Hörsaal B
Di, wöch., 17:00 - 18:30, Marienstraße 13 C - Hörsaal A

Beschreibung

Students will be familiar with the history of structures and structural forms, with building materials and building methods. They will understand the concepts of structural engineering design, including safety concepts, loads and structural design codes. They will be able to convert a structural concept into a mechanical model to determine internal demand and to design and detail the components of the structure, with an emphasis on reinforced concrete and post-tensioned concrete structures as well as steel and steel-concrete composite structures.

Structural Engineering – Advanced systems (summer semester):

Design of steel and steel-concrete composite structures; Post-tensioned concrete structures – design and detailing; Design of steel connections and detailing

Voraussetzungen

B.Sc.

Leistungsnachweis

2 written exams

”Standard systems” / 90 min (50%) / **WiSe** + SuSe --> WiSe!

”Advanced systems” / 90 min (50%) / **SuSe** + WiSe

301013 Advanced modelling - calculation/CAE (L + E)

B. Rüffer, A. Legatiuk Veranst. SWS: 4
Vorlesung
Di, wöch., 09:15 - 12:30, Coudraystraße 13 A - Hörsaal 2

Beschreibung

Scientifically orientated education in mathematical modelling and computer science in view of a complex interdisciplinary and networked field of work and research, modelling and simulation.

Students will have experience in Computer Aided Engineering (CAE) by establishing a problem specific model on the basis of a mathematical formulation, an applicable solution technique, design of efficient data structures and software implementation.

Numerical and analytical solution of partial differential equations, series expansions, integral representations, finite difference methods, description of heat flow, diffusion, wave propagation and elastostatic problems.

The topics are discussed theoretically and then implemented.

Convergence, stability and error analysis of finite difference methods (FDM). Modelling of steady and unsteady heat conduction problems, wave propagation and vibrations and problems from linear thermo-elasticity in 2D and 3D. After considering the mathematical basis, the students will work on individual projects passing all levels of work (engineering model, mathematical model, numerical model, computer model, simulation, evaluation).

The solution methods will be implemented by help of MAPLE or MATLAB.

Bemerkung

This lecture replaces "Advanced Analysis". It is therefore not possible to receive credits for both courses.

Die Veranstaltung ersetzt "Advanced Analysis" und kann daher nicht gemeinsam mit dieser Veranstaltung angerechnet werden.

Leistungsnachweis

1 Project report + Presentation

”Advanced Modelling – Calculation/CAE” (100%) / **SuSe**

303001 Advanced Building Information Modelling

C. Koch, M. Alabassy, J. Krischler Veranst. SWS: 4

Vorlesung

Mi, wöch., 09:15 - 10:45, Coudraystraße 13 B - Pool Fak. B 007, Exercise , ab 13.04.2022
Mi, wöch., 13:30 - 15:00, Marienstraße 7 B - Projektraum 301, Tutorial, 13.04.2022 - 01.06.2022
Mi, wöch., 13:30 - 15:00, Marienstraße 7 B - Projektraum 302, Tutorial, 13.04.2022 - 01.06.2022
Do, wöch., 09:15 - 10:45, Marienstraße 13 C - Hörsaal A, Lecture , ab 14.04.2022
Mi, wöch., 09:15 - 10:45, Marienstraße 7 B - Student Design Studio – SDS 303, Workshop, 08.06.2022 - 13.07.2022
Mi, wöch., 13:30 - 15:00, Marienstraße 7 B - Student Design Studio – SDS 303, Workshop, 08.06.2022 - 13.07.2022
Do, Einzel, 13:00 - 15:00, Steubenstraße 6, Haus F - Hörsaal K20, written exam, 04.08.2022 - 04.08.2022

engl. Beschreibung

Advanced Building Information Modelling

Content: Advanced geometric and parametric modelling, Interoperability and collaboration concepts (IFC, IDM, BEP), Advanced use cases (e.g. clash detection, as-built model-ing), BIM programming (incl. visual programming)

Target qualifications: This module introduces advanced concepts of Building Information Modelling (BIM) to provide students with advanced knowledge in order to understand, analyze and discuss scientific research approaches related to BIM. Within the frame of the mod-ule project (coursework) the students will choose a topic from a pre-defined list or come up with their own topic. Based on that they will do detailed research, imple-ment a representative concept in a software prototype and discuss findings and limi-tations. Also the students acquire skills of scientific working and presentation.

Voraussetzungen

Recommended require-ments for participation: Basic knowledge of Computer-Aided Design, BIM concepts, and object-oriented programming

Leistungsnachweis

written report, presentation

303002 Simulation Methods in Engineering

C. Koch, M. Artus Veranst. SWS: 4

Vorlesung

Fr, wöch., 09:15 - 10:45, Marienstraße 13 C - Hörsaal A, 22.04.2022 - 20.05.2022
Fr, wöch., 13:30 - 15:00, Marienstraße 7 B - Projektraum 301, Exercise , ab 22.04.2022
Fr, wöch., 13:30 - 15:00, Marienstraße 7 B - Projektraum 302, Exercise , ab 22.04.2022
Fr, wöch., 09:15 - 10:45, Marienstraße 13 C - Hörsaal A, ab 03.06.2022

engl. Beschreibung

Simulation Methods in Engineering

Content:

- System analysis and modelling
- System dynamics
- Discrete event simulation
- Multi-agent simulation
- Input data and stochastic simulation
- Simulation based optimization
- Introduction to the software AnyLogic

Target qualifications:

This module provides students with comprehensive knowledge about computer based simulation concepts to address practical challenges in engineering. Modern simulation and optimization software is introduced within tutorials. The module project (coursework) offers an opportunity to students to work in groups on current problems in the context of civil and environmental engineering (e.g. production logistics, pedestrian simulation, pollutant dispersion). Using object-oriented simula-tion software the students will analyze, model and simulate different engineering systems. The programming is carried out using Java. Also the students acquire team working and presentation skills.

Voraussetzungen

Recommended require-ments for participation: Basic knowledge of programming

Leistungsnachweis

Short group report, group presentation, written exam

451002 Introduction to Optimization (L+E)

T. Lahmer Veranst. SWS: 3

Integrierte Vorlesung

Mo, wöch., 09:15 - 10:45, Marienstraße 13 C - Hörsaal B, Lecture
Do, wöch., 07:30 - 09:00, Marienstraße 7 B - Projektraum 301, Exercise Dates by arrangement

Beschreibung

Introduction to Optimization (451002):

Definitions, Classification of Optimization Problems,

Linear Problems, Simplex Method, Nonlinear Problems: Constrained and unconstrained continuous problems, descent methods and variants. (Robust) Structural Optimization (including Shape and Topology Optimization)

Bemerkung

Possible combinations with other lectures acc. to the NHRE-Moduleguide.

Leistungsnachweis

1 written or oral exam (depending on the number of participants)

”Introduction to Optimization” / (50%) / **WiSe** + SuSe

1 written or oral exam (depending on the number of participants)

”Optimization in Applications” / (50%) / **SuSe** + WiSe

451006 Optimization in Applications (P)

T. Lahmer Veranst. SWS: 3
Projektmodul/Projekt

Beschreibung

Optimization in Applications (451006):

Optimization in Applications is generally a project assigned to the students including own programming and modelling. E.g. innovative optimization strategies are to be implemented in Matlab, Python or similar. Alternatively, engineering models could be subjected to optimization software.

Bemerkung

Possible combinations with other lectures acc. to the NHRE-Moduleguide.

Leistungsnachweis

1 written or oral exam (depending on the number of participants)

”Introduction to Optimization” / (50%) / **WiSe** + SuSe

1 written or oral exam (depending on the number of participants)

”Optimization in Applications” / (50%) / **SuSe** + WiSe

903006 Urban infrastructure developement in economical underdeveloped countries

E. Kraft, T. Haupt, T. Schmitz Veranst. SWS: 4
Integrierte Vorlesung
Mo, wöch., 09:15 - 10:45, Coudraystraße 13 B - Seminarraum 208
Mi, wöch., 09:15 - 10:45, Coudraystraße 13 B - Seminarraum 208

Beschreibung

The course increases the knowledge and understanding for differing cultural and economic circumstances or boundary conditions when planning new infrastructure solutions in an international context. Students will learn how to identify structural problems and adapt technical solutions to local settings. Special attention is directed on the ability to balance the economic feasibility versus the ecological necessity of a project when developing new infrastructural solutions. Altogether the course provides insight into environmental, economic as well as socio-cultural

conditions and prerequisites in non-industrialized societies. Suitable technical solutions specifically developed for local requirements are being presented and investigated. Special focus is laid on:

- Planning processes,
- Waste amounts and composition,
- Waste management organization,
- Refinancing models,
- Socio-economic setting,
- Working in developing countries,
- Technical solutions for the collection, transport and treatment of waste streams,
- Innovative and/or low cost sanitation systems,
- Treatment and reuse of black, brown, yellow, grey and rainwater.

Leistungsnachweis

Written exam and voucher

906014 Geo- and hydrotechnical engineering - Part: "Geotechnical Engineering" (L + E)

T. Wichtmann, G. Morgenthal, C. Rodríguez Lugo, P. Staubach Veranst. SWS: 3

Vorlesung

Di, wöch., 15:15 - 16:45, Marienstraße 13 C - Hörsaal A, Exercise
Fr, gerade Wo, 11:00 - 12:30, Lecture Digital
Fr, gerade Wo, 13:30 - 15:00, Lecture Digital

Beschreibung

The objective of this module is focused on deepening the basics of soils mechanics, the fundamentals of analysis in applications for static and dynamic analysis as well as the basics of soil-structure interaction analysis. The students should be able to apply the strategies and methods to arbitrary engineering problems in the given fields. To fix the theoretical background the student has to apply the methods independently at given tasks during several projects.

Geotechnical Engineering

Classification and identification of soils; Description of soil state; Water in the soil; Hydraulic conductivity and seepage flow; Distribution of vertical stress in the soil; Stress-strain relationships; Settlement analysis; Consolidation theory; Shear strength; Earth pressure; Basics of Soil Dynamics (wave propagation, laboratory and field testing, soil-structure interaction under dynamic loading); Soil Liquefaction (phenomenon, consequences, estimation of liquefaction risk, prevention)

Leistungsnachweis

1 written exam

”Geotechnical Engineering” / 90 min (50%) / **SuSe** + WiSe

909012 Projekt Verkehrswesen City and Traffic

W. Hamel, U. Plank-Wiedenbeck, J. Uhlmann, J. Vogel Veranst. SWS: 4

Projekt

Mi, Einzel, 13:00 - 14:00, in SR 305 Marienstr. 13C (Dachgeschoss), 06.04.2022 - 06.04.2022
Mi, wöch., 13:30 - 15:00, Infoveranstaltungin SR 305 Marienstr. 13C (Dachgeschoss), 13.04.2022 - 13.07.2022

Beschreibung

Das Projekt besteht aus einem semesterbegleitenden Seminar und dem internationalen Workshop "City and Traffic".

In dem Seminar werden Inhalte zur Straßenraumgestaltung, den Nutzeranforderungen aller Verkehrsteilnehmer sowie zu verkehrsplanerischen und -technischen Aspekten praxisnah vermittelt. Studierende erarbeiten einen semesterbegleitenden Beleg, der mit einer Präsentation abschließt.

Im Anschluss findet der Workshop "City and Traffic" statt. Dieser führt jedes Jahr ca. 45 Studierende des Bauingenieur- und Verkehrswesens, der Landschaftsarchitektur und des Städtebaus aus mehr als acht Nationen zusammen. Studierende und Lehrende aus Bratislava, Györ, Krakau, Maribor, Belgrad, Prag, Vilnius, Wien und Weimar widmen sich in international und interdisziplinär zusammengesetzten Gruppen einer aktuellen verkehrsplanerischen Fragestellung der gastgebenden Stadt. Der Schwerpunkt liegt dabei auf der sicheren Gestaltung von Fußgänger- und Radverkehrsanlagen, aber auch von Knotenpunkten, Parkplätzen oder Haltestellen des öffentlichen Personennahverkehrs. Der Workshop soll helfen, unterschiedliche Schwerpunkte und Interessen der Verkehrsplaner, Stadtplaner, Architekten und Landschaftsarchitekten an einem konkreten Objekt zu vereinen und zu einem gemeinsamen Resultat zusammen zu führen. So stellt der Workshop eine geeignete Plattform für die schnelle Entwicklung technischen Wissens, die Förderung von Netzwerken und Partnerschaften und nicht zuletzt für den Wissensaustausch zwischen verschiedenen europäischen Ländern dar. Die Lösungen können insbesondere den Gastgebern Impulse und Anregungen für die weitere Planung geben.

Bemerkung

Interessierte besuchen bitte die Informationsveranstaltung der Professur Verkehrssystemplanung am Mittwoch, den 06.04.2022 um 13 Uhr im Raum 305, M13c. Sollte es die aktuelle Situation nicht ermöglichen, eine Präsenzveranstaltung durchzuführen, informieren wir Sie darüber kurzfristig auf dieser Seite.” . Die Teilnehmendenanzahl für den Workshop im Ausland ist begrenzt; daher gibt es bei mehr Interessenten ein Auswahlverfahren (Motivationsschreiben). Die Auswahl erfolgt zeitnah nach der Informationsveranstaltung.
Der Workshop "City and Traffic" findet voraussichtlich in der Zeit vom 03.-09. Juli 2021 statt. Gastgeber ist dieses Jahr die Universität Maribor (Slowenien). Ob der Workshop wie geplant stattfinden kann, hängt von der im Sommer vorherrschenden Situation ab. Eine Entscheidung darüber fällt möglicherweise erst recht kurzfristig. Wir werden Sie im Verlaufe des Semesters im Rahmen des Seminars weiter darüber informieren

Voraussetzungen

Auswahl durch die Professur.

Leistungsnachweis

1. Teil Seminar: Studienbegleitender Beleg (Bericht) mit Endpräsentation (alles in Gruppenarbeit).

2. Teil Workshop: Workshop-Teilnahme (Gruppenarbeit) mit nachzureichendem Abschlussbericht von ca. 10 Seiten (Einzelleistung) sowie Erarbeitung eines Gruppen-Posters.

Summerschool P3: Use of Polymer-Modified Concretes (PCC) for Innovative Refurbishment Solutions

A. Flohr

Integrierte Vorlesung

Mo, Einzel, 13:30 - 15:00, Project introduction, 22.08.2022 - 22.08.2022
Di, Einzel, 13:30 - 17:00, Coudraystraße 11 C - Seminarraum (geologische Sammlung) 202, PCC: Basics / Load deformation behavior, 23.08.2022 - 23.08.2022
Mi, Einzel, 09:00 - 12:30, Coudraystraße 11 C - Seminarraum (geologische Sammlung) 202, Particle interactions / PCC for innovative refurbishment solutions, 24.08.2022 - 24.08.2022
Do, Einzel, 11:00 - 12:30, Coudraystraße 11 C - Seminarraum (geologische Sammlung) 202, PCC: Modelling of PCC load deformation behavior, 25.08.2022 - 25.08.2022
Do, Einzel, 13:30 - 17:00, MATHLAB-Übung, 25.08.2022 - 25.08.2022
Mo, Einzel, 13:30 - 17:00, 29.08.2022 - 29.08.2022
Di, Einzel, 13:30 - 17:00, PCC: fresh concrete properties, 30.08.2022 - 30.08.2022
Do, Einzel, 09:00 - 12:30, PCC: hardened concrete properties, 01.09.2022 - 01.09.2022

Beschreibung

Concretes are modified by the addition of polymers in order to improve the durability and the adhesive strength and due to that measure they suit optimal for refurbishment applications. The microstructural changes in the binder

matrix, which consists of both cementitious and polymer components, will be studied. Afterwards it will be analyzed how they influence the macroscopic properties. The students will perform and analyze laboratory tests on different pure polymer specimens and selected concrete specimens in order to better understand the microscopic origin of the macroscopic behavior. The link between the micromechanical and macroscopic properties is briefly established using a continuum micromechanics approach. Different innovative restoration applications are addressed, in addition some examples will be shown for the use of PCC for constructional purposes.