Vorlesungsverzeichnis

English-taught courses of the Faculty

SoSe 2024

Stand 23.04.2024

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 I
1-Gruppe Mo, wöch., 17:00 - 18:30, Marienstraße 7 B - Seminarraum 205, NHRE - Group I
2-Gruppe Do, wöch., 17:00 - 18:30, Marienstraße 7 B - Projektraum 301, NHRE - Group II
2-Gruppe Do, wöch., 17:00 - 18:30, Marienstraße 7 B - Seminarraum 205, NHRE - Group II
Do, wöch., 13:30 - 15:00, Marienstraße 13 C - Hörsaal C, Lecture will start 11.04.2024
Do, wöch., 15:15 - 16:45, Marienstraße 13 C - Hörsaal C, Lecture * Dates by arrangement

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, S. Beinersdorf Veranst. SWS: 3

Vorlesung
Di, wöch., 15:15 - 16:45, Marienstraße 13 C - Hörsaal C
Do, wöch., 11:00 - 12:30, Marienstraße 13 C - Hörsaal C, Dates by arrangement

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 Multi-hazard and risk assessment (L + E)

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

Vorlesung
Di, Einzel, 13:30 - 15:00, Marienstraße 7 B - Seminarraum 102, 14.05.2024 - 14.05.2024
Di, Einzel, 13:30 - 15:00, Marienstraße 7 B - Seminarraum 102, 28.05.2024 - 28.05.2024
Mo, Einzel, 15:15 - 16:45, Marienstraße 13 C - Hörsaal C, 10.06.2024 - 10.06.2024
Mo, Einzel, 15:15 - 16:45, Marienstraße 13 C - Hörsaal C, 17.06.2024 - 17.06.2024
Di, Einzel, 13:30 - 15:00, Marienstraße 7 B - Seminarraum 102, 25.06.2024 - 25.06.2024
Mo, wöch., 15:15 - 16:45, Marienstraße 7 B - Seminarraum 205
Di, wöch., 13:30 - 15:00, Marienstraße 13 C - Hörsaal C

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” during excursion to GFZ Potsdam

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; creation of shakemaps; data pre-processing; Hazard Description for the Project regions

Bemerkung

In this course 17 students can take part. **It is compulsory for the DAAD-scholarship holders of NHRE intake 2023.** There will be an introduction to the module at April 8th, 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 5th, 2024**. We will inform you about the decision until April 8th, 2024.

The excursion to Berlin and Potsdam will 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**

202012 Experimental testing based on impact and resistance: wind, fire and earthquake

L. Abrahamczyk Veranst. SWS: 4

Vorlesung

Mi, wöch., 15:15 - 18:30, hybrid format (Lectures online)

Beschreibung

Students will be familiar with principles of the design and setup, as well as evaluation and interpretation of experimental testing in structural engineering, by attending the experiments in a virtual environment. The students will be encouraged to apply their theoretical knowledge and competences for solving complex practical tasks, and thus, to build their own ”mental models”. It will be focused on the special and diverse demands in the elaboration of repeatable and destructive testing. Students will be familiar with instrumental methods and instrumentation requirements to provide structure related parameters and characteristic e.g. force-displacement relationships in support of analytical studies. Students should be able to decide upon appropriate test configuration for particular problems and to formulate the right questions in preparation of experimental studies. Students will be trained in distant group work.

Bemerkung

Lectures: (hybrid format)
Theoretical background about experimental testing based on impact and resistance with focus on wind, fire and earthquake;

testing facilities and technical equipment; demands on specimens and scaling requirements; arrangement of sensors;
application of equivalent impact/action (e.g. forces) in pseudo static and dynamic testing; physical interpretation and presentation of experimental data;

Project:
Training of modelling and analysis methods; study of code requirements and their application to different structural systems;
evaluation of structural performance for wind and seismic action; Tools: Matlab or Python; SAP2000

Workshop / Excursion (presence):
Training in and practicing presentation skills; visit of construction sites; networking;
Date: from 24th to 31st of March 2023
Place: Weimar and Bochum

Leistungsnachweis

Project presentation (oral), 50%
Project report, 50%

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

G. Morgenthal, V. Rodehorst, B. Rüffer, T. Gebhardt, S. Rau, M. Schönlein Veranst. SWS: 4.5

Vorlesung

Fr, wöch., 09:15 - 12:30, Marienstraße 13 C - Hörsaal C
Fr, wöch., 13:30 - 15:00, Marienstraße 13 C - Hörsaal C

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 D, Lecture
Mi, wöch., 07:30 - 09:00, Marienstraße 13 C - Hörsaal C, 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, 205033 Structural engineering - Steel structures (L)

M. Kraus, S. Ibañez Sánchez Veranst. SWS: 3

Vorlesung

Mo, wöch., 13:30 - 15:00, Marienstraße 7 B - Seminarraum 103
Di, wöch., 17:00 - 18:30, Marienstraße 13 C - Hörsaal C

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

”Reinforced and post-tensioned concrete structures” / 90 min (50%) / **WiSe** + SuSe --> WiSe!

”Steel structures” / 90 min (50%) / **SuSe** + WiSe

2401012 Applied Finite element methods (Exercise)

T. Rabczuk, A. Habtemariam, J. Lopez Zermeño, F. Tartaglione Garcia Veranst. SWS: 1
Seminar
Mi, wöch., 13:30 - 15:00, Marienstraße 7 B - Seminarraum 205, Tutorium
Fr, wöch., 07:30 - 09:00, Marienstraße 7 B - Projektraum 302, Exercise

2401012 Applied Finite element methods (Lecture)

T. Rabczuk, C. Könke Veranst. SWS: 2
Vorlesung
Mo, wöch., 07:30 - 09:00, Marienstraße 7 B - Seminarraum 205

301016 Complex dynamics

B. Rüffer Veranst. SWS: 4
Vorlesung
Do, wöch., 07:30 - 10:45, Marienstraße 7 B - Seminarraum 206, Will start at 04.04.2024 9:00 am!

Beschreibung

After the course the students will be able to analyse mathematical models that describe dynamic behaviour, as they occur in engineering (e.g. mechanical coupling of building structures), in biology and in physics, but also in multi-agent systems in computer science, or as opinion dynamics in psychology. Based on examples from different disciplines, students learn to build simplified models that allow to answer questions on their long-term behaviour. Students will be able to apply methods of feedback design that help shape the dynamics of a given system, along with the relevant stability concepts. As several topics lend themselves for computer simulation, students of this course will develop a proficiency to both implement and analyse mathematical models using computational tools and software.

Bemerkung

Examples of complex dynamics. Models for dynamical systems in continuous and discrete time. Computer simulation. Control and Feedback. Stability, stabilization, and Lyapunov functions. Coupled systems: Disturbance or Cooperation? Networks of systems. Consensus. Synchronization.

The topics will be presented in a lecture, deepened by exercises. Some of the exercise include computer programming and simulation.

Voraussetzungen

B.Sc., knowledge in Matlab or Python

Leistungsnachweis

1 written exam

”Complex dynamics”

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

301017 Mathematics for data science

B. Rüffer, M. Schönlein Veranst. SWS: 4

Vorlesung

Mo, wöch., 09:15 - 12:30, Coudraystraße 13 B - Seminarraum 210
Mo, wöch., 09:15 - 12:30, Coudraystraße 13 A - Hörsaal 2

Beschreibung

After the course the students will be familiar with the fundamental concepts of data science. The participants can analyse given data sets with respect to dimensionality reduction and clustering. They also know the basic structure of neural networks and support vector machines to solve classification tasks. The participants know relevant methods from linear algebra and optimization and can apply these techniques. This embraces the design of appropriate algorithms and the implementation of different numerical methods to solve the corresponding problems.

Bemerkung

Examples of complex dynamics. Models for dynamical systems in continuous and discrete time. Computer simulation. Control and Feedback. Stability, stabilization, and Lyapunov functions. Coupled systems: Disturbance or Cooperation? Networks of systems. Consensus. Synchronization.

The topics will be presented in a lecture, deepened by exercises. Some of the exercise include computer programming and simulation.

Voraussetzungen

B. Sc.; Analysis and Linear Algebra at Bachelor level, knowledge of Matlab or Python

Leistungsnachweis

1 written exam

”Complex dynamics”

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

303001 Advanced Building Information Modelling

C. Koch, J. Krischler, J. Taraben Veranst. SWS: 4

Vorlesung
Mi, wöch., 11:00 - 12:30, Coudraystraße 13 B - Pool Fak. B 007, Exercise
Mi, wöch., 11:00 - 12:30, Marienstraße 7 B - Student Design Studio – SDS 303, Exercise
Mi, wöch., 11:00 - 12:30, Coudraystraße 11 C - Pool-Raum 101, Exercise
Do, wöch., 09:15 - 10:45, Marienstraße 13 C - Hörsaal A, Lecture

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.

Bemerkung

NHRE: Possible as Elective Compulsory as from Intake 2022

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
Fr, wöch., 13:30 - 15:00, Marienstraße 7 B - Projektraum 301
Fr, wöch., 13:30 - 15:00, Marienstraße 7 B - Projektraum 302

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 D, Lecture
Di, wöch., 07:30 - 09:00, Marienstraße 7 B - Projektraum 301, Exercise Dates by arrangement

Beschreibung

In engineering science, we are often faced with problems having potential for optimization. We learn how to formulate this in mathematical terms, and we will study techniques how to improve the situations, generally by involving numerical models. We will discuss classical optimization problems in the field of linear and nonlinear optimization, e.g. optimization of the use of resources, routing problems, calibration problems and structural optimization. In particular in structural optimization we learn techniques like dimensioning, shape and topology optimization. Optimized structures are discussed also in the context of additive manufacturing techniques.

Bemerkung

Introduction to Optimization (summer semester):

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)

Voraussetzungen

B.Sc.

Leistungsnachweis

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

”Introduction to Optimization” (3 credits) / **SuSe** + WiSe

451006 Optimization in Applications (P)

T. Lahmer Veranst. SWS: 3

Projektmodul/Projekt

Beschreibung

In engineering science, we are often faced with problems having potential for optimization. We learn how to formulate this in mathematical terms, and we will study techniques how to improve the situations, generally by involving numerical models. We will discuss classical optimization problems in the field of linear and nonlinear optimization, e.g. optimization of the use of resources, routing problems, calibration problems and structural

optimization. In particular in structural optimization we learn techniques like dimensioning, shape and topology optimization. Optimized structures are discussed also in the context of additive manufacturing techniques.

Bemerkung

Optimization in Applications (summer semester):

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.

Leistungsnachweis

1 project ”Optimization in Applications” (3 credits) / **SuSe** + WiSe

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

P. Staubach, C. Rodríguez Lugo Veranst. SWS: 3

Vorlesung

Mi, wöch., 09:15 - 10:45, Marienstraße 7 B - Seminarraum 103
Fr, wöch., 15:15 - 16:45, Marienstraße 13 C - Hörsaal C, Dates by arrangement

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

R. Kramm, H. Teichmann, U. Plank-Wiedenbeck, J. Uhlmann, T. Feddersen Veranst. SWS: 4

Projekt

Mi, Einzel, 13:30 - 15:00, Marienstraße 7 B - Seminarraum 103, 03.04.2024 - 03.04.2024
Mi, wöch., 13:30 - 15:00, im Seminarraum der Professur Verkehrssystemplanung, 10.04.2024 - 10.07.2024

Beschreibung

Das Modul „City and Traffic” besteht aus einem semesterbegleitenden Projekt (6 ECTS) und einer internationalen Workshop-Woche (6 ECTS). Im Projekt werden Inhalte zur Straßenraumgestaltung, den Nutzeranforderungen aller Verkehrsteilnehmenden sowie zu verkehrsplanerischen und -technischen Aspekten praxisnah vermittelt. Im Sommersemester 2024 werden wir uns im Projekt und Workshop mit der Science Mile Q3 beschäftigen. Dabei geht es darum, die Coudraystraße als Campus der Bauhaus-Universität Weimar zu begreifen, entsprechende Varianten

für eine Umplanung zu erarbeiten und dabei auch die Anbindung und Verknüpfung zum Campus in der Marienstraße herzustellen. Visionen für die Straßenraum-, Freiflächen- und Netzplanung stehen hierbei im Vordergrund der Aufgabe.

Zum Ende des Semesters findet die internationale Workshop-Woche in der Zeit vom 08.-12- Juli 2024 statt. Dieser Workshop führt jedes Jahr ca. 40 Studierende des Bauingenieur- und Verkehrswesens, der Landschaftsarchitektur und des Städtebaus aus bis zu acht Nationen zusammen. Studierende und Lehrende aus Bratislava, Györ, Krakau, Maribor, Belgrad, Prag, Vilnius, Wien und Weimar sind eingeladen, sich in international und interdisziplinär zusammengesetzten Gruppen mit einer aktuellen verkehrsplanerischen Fragestellung der gastgebenden Stadt auseinander zu setzen. Im Jahr 2024 wird die Bauhaus-Universität Weimar Gastgeber des Workshops sein, welcher sich ebenfalls mit dem Thema Science Mile Q3 - Campus Coudraystraße beschäftigen wird. 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 Projekt zu vereinen und zu einem gemeinsamen Resultat zusammen zu führen. So ermöglicht der Workshop eine schnelle Entwicklung technischen Wissens, die Förderung von Netzwerken und Partnerschaften und nicht zuletzt den Wissensaustausch zwischen verschiedenen europäischen Ländern.

Bemerkung

Interessierte Studierende besuchen bitte die Informationsveranstaltung der Professur Verkehrssystemplanung am Mittwoch, den 03.04.2024 um 13:30 Uhr in Raum 103 in der Marienstraße 7. Die Teilnehmendenzahl für das Modul sind begrenzt; daher gibt es ein Auswahlverfahren mit Motivationsschreiben. Bitte senden Sie bei Interesse bis Donnerstag, 04.04.2024 um 17:00 Uhr ein Motivationsschreiben an rebekka.maria.kramm@uni-weimar.de und hilde.marie.teichmann@uni-weimar.de. Beschreiben Sie bitte auf max. 1 Seite, warum Sie Interesse an dem Projekt haben und welche Fähigkeiten und Kenntnisse Sie mitbringen. Geben Sie im Motivationsschreiben bitte Ihren Namen, Ihren Studiengang, Ihr aktuelles Fachsemester sowie Ihre Vorkenntnisse im Bereich der Verkehrsplanung und/oder Freiraumplanung aus bisherigen Modulen, Projekten oder Praktika an. Außerdem gibt es die Möglichkeit, das Projekt als 6 ECTS-Projekt ohne den internationalen Workshop am Ende des Semesters zu belegen. Bitte geben Sie in Ihrem Motivationsschreiben an, ob Sie das Projekt mit oder ohne Workshopbelegen möchten. Die Auswahl für die Teilnahme erfolgt bis Freitag, 05.04.2024 um 14:00 Uhr.

Je nach Teilnehmendenzusammensetzung findet das Projekt entweder auf Deutsch oder auf Englisch statt. Der Workshop findet in Englischer Sprache statt.

Voraussetzungen

Vorkenntnisse im Bereich der Verkehrs- und/oder Freiraumplanung sind erwünscht. Die Auswahl der Studierenden erfolgt anhand der Motivationsschreiben durch die Professur Verkehrssystemplanung.

Leistungsnachweis

Teil 1/2 - semesterbegleitendes Projekt: Studienbegleitender Beleg (Bericht inkl. Plänen/Zeichnungen) mit Endpräsentation (beides in Gruppenarbeit mit 2-5 Studierenden).
Teil 2/2 - Workshop: Workshop-Teilnahme (Gruppenarbeit) mit nachzureichendem Abschlussbericht von ca. 10 Seiten (Einzelleistung) sowie Erarbeitung eines Gruppen-Posters in der Workshop-Woche.

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

A. Flohr

Integrierte Vorlesung

Di, Einzel, 13:30 - 15:00, Basics of PCC, 20.08.2024 - 20.08.2024
Mi, Einzel, 09:00 - 12:30, PCC for refurbishment solutions, 21.08.2024 - 21.08.2024
Mi, Einzel, 13:30 - 17:00, Load-deformation behaviour of PCC / Multiscale modelling approach for PCC, 21.08.2024 - 21.08.2024
Do, Einzel, 13:30 - 15:00, Particle interaction, 22.08.2024 - 22.08.2024
Mo, Einzel, 09:00 - 12:30, Ex: Nano-CT, 26.08.2024 - 26.08.2024
Mo, Einzel, 13:30 - 17:00, PCC: fresh concrete properties, 26.08.2024 - 26.08.2024

Do, Einzel, 09:00 - 12:30, PCC: hardened concrete properties, 29.08.2024 - 29.08.2024

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.