

Vorlesungsverzeichnis

M.Sc. Natural hazards and risk in structural engineering (as from Intake 2017/2018)

Sommer 2019

Stand 12.11.2019

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M.Sc. Natural hazards and risk in structural engineering (as from Intake 2017/2018)**401020 Modelling in the development process****C. Könke, N.N.**

Veranst. SWS: 2

Blockveranstaltung

Mo, Einzel, 07:30 - 11:00, Marienstraße 7 B - Seminarraum 102, 29.04.2019 - 29.04.2019

Mo, Einzel, 17:00 - 20:00, Marienstraße 7 B - Seminarraum 102, 29.04.2019 - 29.04.2019

Mo, Einzel, 07:30 - 11:00, Marienstraße 7 B - Seminarraum 102, 13.05.2019 - 13.05.2019

Mo, Einzel, 17:00 - 20:00, Marienstraße 7 B - Seminarraum 102, 13.05.2019 - 13.05.2019

Mo, Einzel, 07:30 - 11:00, Marienstraße 7 B - Seminarraum 102, 03.06.2019 - 03.06.2019

Mo, Einzel, 17:00 - 20:00, Marienstraße 7 B - Seminarraum 102, 03.06.2019 - 03.06.2019

Mo, Einzel, 07:30 - 11:00, Marienstraße 7 B - Seminarraum 102, 24.06.2019 - 24.06.2019

Mo, Einzel, 17:00 - 20:00, Marienstraße 7 B - Seminarraum 102, 24.06.2019 - 24.06.2019

Mo, Einzel, 07:30 - 11:00, Marienstraße 7 B - Seminarraum 102, Ersatztermin, 01.07.2019 - 01.07.2019

Mo, Einzel, 17:00 - 20:00, Marienstraße 7 B - Seminarraum 102, Ersatztermin, 01.07.2019 - 01.07.2019

Mo, Einzel, 09:00 - 11:00, Marienstraße 13 C - Hörsaal D, Final examination, 15.07.2019 - 15.07.2019

engl. Beschreibung

Content:

In the modelling process, several development stages with increasing level of detail are used. According to these levels the appropriate models should be chosen:

- Descriptive models
- Schematic models
- Qualitative models
- Quantitative models

Several criteria for model selection and a variety of tools for modeling are demonstrated.

Target qualifications:

The students will be familiar with a procedure for the solution of tasks from engineering practice with the help of models from structural mechanics. This development and planning process serves as a guideline for modelling. The students will be trained to use modern CAD software (CATIA) and FEM Code (Abaqus, including pre- and post-processing).

Bemerkung**external lecturer: Dr.-Ing. Christian Guist – BMW Group**

Teaching and learning forms: Lectures, exercises in computer pool, self-study, Demonstration exercises.

This module is comprised of: Modelling in the development process "Modeling in the Development Process" (Block seminar, 2 SWS)

Voraussetzungen

Formal requirements for participation: ---

Recommended requirements for participation: Basic knowledge of mechanics and FEM

Leistungsnachweis

written exam

Applied mathematics and stochastics for risk assessment

301012 Re-examination: Applied mathematics & Stochastics for risk assessment

T. Lahmer

Prüfung

Mo, Einzel, 13:00 - 16:00, Marienstraße 13 C - Hörsaal D, Re-examination, 22.07.2019 - 22.07.2019

Bemerkung

Re-examination

Disaster management and mitigation strategies

901005 Re-examination: Project- and Disaster Management

H. Bargstädt

Prüfung

Do, Einzel, 13:00 - 14:30, Marienstraße 7 B - Seminarraum 102, 18.07.2019 - 18.07.2019

Bemerkung

Re-examination

Earthquake engineering and structural design

202002 Earthquake engineering and structural design (L)

L. Abrahamczyk, J. Schwarz

Veranst. SWS: 6

Vorlesung

1-Gruppe Di, wöch., 17:00 - 18:30, Marienstraße 7 B - Projektraum 301, NHRE - Group A, ab 09.04.2019
 2-Gruppe Do, wöch., 07:30 - 09:00, Marienstraße 7 B - Projektraum 301, NHRE - Group B, ab 11.04.2019
 3-Gruppe Do, wöch., 11:00 - 12:30, Marienstraße 7 B - Projektraum 301, NHRE - Group C, ab 11.04.2019
 4-Gruppe Do, wöch., 17:00 - 18:30, Marienstraße 7 B - Projektraum 301, NHRE - Group C, ab 11.04.2019
 Di, Einzel, 09:00 - 12:00, Marienstraße 13 C - Hörsaal A, Final examination, 16.07.2019 - 16.07.2019
 Di, Einzel, 09:00 - 12:00, Marienstraße 13 C - Hörsaal D, Final examination, 16.07.2019 - 16.07.2019
 Do, wöch., 13:30 - 16:45, Marienstraße 13 C - Hörsaal A

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

recommended module "Primary Hazards and Risks" NHRE

Leistungsnachweis

written exam

Project report + Project presentation

Finite element methods and structural dynamics

2401015-1 Finite element methods (Exercise)

C. Könke, A. Habtemariam, F. Tartaglione

Veranst. SWS: 1

Seminar

1-Gruppe Do, wöch., 17:00 - 18:30, Marienstraße 7 B - Projektraum 302, bis 22.05.2019

2-Gruppe Di, wöch., 17:00 - 18:30, Marienstraße 7 B - Projektraum 302, bis 21.05.2019

3-Gruppe Do, wöch., 07:30 - 09:00, Marienstraße 7 B - Projektraum 302, bis 22.05.2019

4-Gruppe Do, wöch., 11:00 - 12:30, Marienstraße 7 B - Projektraum 302, bis 22.05.2019

2401015-1 Finite element methods (Lecture)

C. Könke

Vorlesung

Fr, Einzel, 09:00 - 10:30, Marienstraße 7 B - Seminarraum 102, Final examination, 26.07.2019 - 26.07.2019

Fr, Einzel, 09:00 - 10:30, Marienstraße 7 B - Seminarraum 103, Final examination, 26.07.2019 - 26.07.2019

Fr, Einzel, 09:00 - 10:30, Marienstraße 7 B - Seminarraum 104, Final examination, 26.07.2019 - 26.07.2019

Fr, Einzel, 09:00 - 10:30, Marienstraße 7 B - Seminarraum 105, Final examination, 26.07.2019 - 26.07.2019

Fr, Einzel, 09:00 - 10:30, Marienstraße 7 B - Seminarraum 106, Final examination, 26.07.2019 - 26.07.2019

Mi, wöch., 09:15 - 10:45, Marienstraße 13 C - Hörsaal D, bis 22.05.2019

Fr, wöch., 07:30 - 09:00, Marienstraße 13 C - Hörsaal D, bis 24.05.2019

Beschreibung

Finite element methods: (50% of semester course time)

strong and weak form of equilibrium equations in structural mechanics, Ritz and Galerkin principles, shape functions for 1D, 2D, 3D elements, stiffness matrix, numerical integration, Characteristics of stiffness matrices, solution methods for linear equation systems, post-processing and error estimates, defects of displacements based formulation, mixed finite element approaches,

Voraussetzungen

Bachelor Civil Engineering

Leistungsnachweis

1 written exam: „Fundamentals of finite element methods“/ 90 min (50%)

401014 Re-examination: Structural Dynamics**V. Zabel**

Prüfung

Mi, Einzel, 09:00 - 10:30, Marienstraße 7 B - Seminarraum 102, 17.07.2019 - 17.07.2019

Mi, Einzel, 09:00 - 10:30, Marienstraße 7 B - Seminarraum 103, 17.07.2019 - 17.07.2019

Bemerkung

Re-examination

Geo- and hydrotechnical engineering**202003 Flood Hazard and Vulnerability Assessment (L+P)****H. Maiwald**

Veranst. SWS: 3

Vorlesung

Do, Einzel, 09:00 - 11:00, Marienstraße 13 C - Hörsaal A, Final examination, 18.07.2019 - 18.07.2019

Do, Einzel, 09:00 - 11:00, Marienstraße 13 C - Hörsaal D, Final examination, 18.07.2019 - 18.07.2019

Mi, wöch., 11:00 - 12:30, Marienstraße 13 C - Hörsaal D

Fr, wöch., 15:15 - 16:45, Marienstraße 13 C - Hörsaal D

Beschreibung**Flood Hazard and Vulnerability Assessment:**

Flood Management; Fundamentals of flood defense; Management of low-lying areas; Design of river dikes, channels and dams; Design concepts for the defense of structural objects and buildings; Forecasting, management and maintenance in flood defense; 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.

engl. Beschreibung/ Kurzkomentar

Management, defence and calculation of extreme floods:

Design flood; Hydrology; Flood types; Hydraulic calculations; Basins; Flood areas; Dams; Flood dams; Flood walls; Mobile flood protection; Flood protection by flood areas; Flood alarm and control systems; Flood activity plans; Master plan; Flood area management; Flood precaution; Damage assessment.

Bemerkung

Vorlesungen in englischer Sprache "Flood Management"

Leistungsnachweis

1 written exam - 90 Min.

906014 Geotechnical Engineering**T. Wichtmann**

Veranst. SWS: 3

Vorlesung

Di, Einzel, 13:30 - 16:45, Coudraystraße 13 A - Hörsaal 2, 02.04.2019 - 02.04.2019

Di, wöch., 13:30 - 16:45, Coudraystraße 9 A - Hörsaal 6, ab 09.04.2019

Di, Einzel, 09:00 - 11:00, Coudraystraße 9 A - Hörsaal 6, Final examination, 23.07.2019 - 23.07.2019

Di, Einzel, 09:00 - 11:00, Coudraystraße 11 C - Seminarraum (geologische Sammlung) 202, Final examination, 23.07.2019 - 23.07.2019

Beschreibung

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

Written Exam - 90 Min.

Geographical Information Systems (GIS) and building stock survey**Life-lines engineering****204019 Re-examination: Life-lines engineering****G. Morgenthal**

Prüfung

Di, Einzel, 13:00 - 16:00, Marienstraße 7 B - Seminarraum 205, Re-examination, 30.07.2019 - 30.07.2019

Di, Einzel, 13:00 - 16:00, Marienstraße 7 B - Seminarraum 206, Re-examination, 30.07.2019 - 30.07.2019

Bemerkung

Re-examination

Primary hazards and risks**202001 Re-examination: Seismic Monitoring****J. Schwarz**

Prüfung

Fr, Einzel, 13:00 - 16:00, Marienstraße 7 B - Seminarraum 205, Re-examination, 19.07.2019 - 19.07.2019

Bemerkung

Re-examination

204017 Re-examination: Wind Engineering**G. Morgenthal**

Prüfung

Fr, Einzel, 10:00 - 11:30, Marienstraße 7 B - Seminarraum 206, Re-examination, 02.08.2019 - 02.08.2019

Bemerkung

Re-examination

Structural engineering

205012 Re-examination: Structural engineering – Standard systems

M. Kraus, G. Morgenthal

Prüfung

Mi, Einzel, 13:30 - 15:00, Marienstraße 7 B - Seminarraum 102, Re-examination, 24.07.2019 - 24.07.2019

Mi, Einzel, 13:30 - 15:00, Marienstraße 7 B - Seminarraum 103, Re-examination, 24.07.2019 - 24.07.2019

Bemerkung

Re-examination

205013 Structural engineering – Advanced systems (Lecture)

M. Kraus, G. Morgenthal, B. Wittor

Veranst. SWS: 3

Vorlesung

Di, Einzel, 07:30 - 09:00, Marienstraße 13 C - Hörsaal C, 30.04.2019 - 30.04.2019

Mo, Einzel, 09:00 - 12:00, Marienstraße 13 C - Hörsaal A, Final examination, 29.07.2019 - 29.07.2019

Mo, Einzel, 09:00 - 12:00, Marienstraße 13 C - Hörsaal D, Final examination, 29.07.2019 - 29.07.2019

Mo, wöch., 11:00 - 12:30, Marienstraße 13 C - Hörsaal D

Do, wöch., 09:15 - 10:45, Marienstraße 13 C - Hörsaal A

Beschreibung

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

Bemerkung

Start on 23.11.

Voraussetzungen

Bachelor Civil Engineering

Leistungsnachweis

Written exam - 90 Min.

Structural parameter survey and evaluation

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

G. Morgenthal, V. Rodehorst, R. Illge, S. Rau

Veranst. SWS: 4.5

Vorlesung

Fr, Einzel, 11:00 - 12:30, Marienstraße 7 B - Projektraum 301, 07.06.2019 - 07.06.2019

Fr, Einzel, 11:00 - 12:30, Marienstraße 7 B - Projektraum 301, 21.06.2019 - 21.06.2019

Fr, Einzel, 11:00 - 12:30, Marienstraße 7 B - Projektraum 301, 28.06.2019 - 28.06.2019

Fr, Einzel, 11:00 - 12:30, Marienstraße 7 B - Projektraum 301, 05.07.2019 - 05.07.2019

Do, Einzel, 09:00 - 12:00, Marienstraße 13 C - Hörsaal A, Final examination, 01.08.2019 - 01.08.2019

Do, Einzel, 09:00 - 12:00, Marienstraße 13 C - Hörsaal D, Final examination, 01.08.2019 - 01.08.2019

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

Beschreibung

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 behavior 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

Bemerkung

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.

Leistungsnachweis

1 written exam - 120 Min.

Special Project

Elective compulsory modules

401007 Structural Engineering Models

C. Könke

Veranst. SWS: 4

Integrierte Vorlesung

Di, wöch., 15:15 - 16:45, Marienstraße 7 B - Seminarraum 205, ab 02.04.2019

Di, Einzel, 11:00 - 13:00, Marienstraße 13 C - Hörsaal A, exam, 30.07.2019 - 30.07.2019

Do, wöch., 15:15 - 16:45, Marienstraße 7 B - Seminarraum 102

Beschreibung

Student will be able to build an abstract model for structural engineering problem and to assess its restriction and quality. The student will be able to perform dimension reduction in structural engineering using concepts from structural mechanics. They will be capable of classify different types of civil engineering structures and to distinguish different principal load transfer processes. The student can classify linear/nonlinear problems and time variant/invariant problems in structural engineering.

Fundamental equations in structural mechanics for 1D, 2D and 3D structures, equilibrium equation, kinematic relation, constitutive law, Method to establish the governing differential equations, Differences between geometric / physical linear and non-linear problems, Classification of different types of structures: truss, beam, plate, shell problems

Voraussetzungen

basic course in structural mechanics

basic course in applied mathematics

Leistungsnachweis

written test

Requirements for exam registration: 2 home works accepted

2401012 Applied Finite element methods (Exercise)**C. Könke**

Veranst. SWS: 1

Seminar

1-Gruppe Do, wöch., 17:00 - 18:30, Marienstraße 7 B - Projektraum 302, Group A, ab 06.06.2019

2-Gruppe Di, wöch., 17:00 - 18:30, Marienstraße 7 B - Projektraum 302, Group A, ab 28.05.2019

3-Gruppe Do, wöch., 07:30 - 09:00, Marienstraße 7 B - Projektraum 302, Group A, ab 06.06.2019

4-Gruppe Do, wöch., 11:00 - 12:30, Marienstraße 7 B - Projektraum 302, Group A, ab 06.06.2019

303001 Advanced Building Information Modelling**C. Koch, T. Behnke, J. Wagner**

Veranst. SWS: 4

Vorlesung

Mi, wöch., 11:00 - 12:30, Marienstraße 13 C - Hörsaal C, 03.04.2019 - 08.05.2019

Do, wöch., 09:15 - 10:45, Marienstraße 7 B - Projektraum 301, lab, ab 04.04.2019

Do, wöch., 09:15 - 10:45, Marienstraße 7 B - Projektraum 302, lab, ab 04.04.2019

Fr, wöch., 07:30 - 09:00, Marienstraße 7 B - Projektraum 301, lab, ab 05.04.2019

Fr, wöch., 07:30 - 09:00, Marienstraße 7 B - Projektraum 302, lab, ab 05.04.2019

Mi, Einzel, 11:00 - 12:30, Coudraystraße 13 A - Hörsaal 2, 15.05.2019 - 15.05.2019

Mi, wöch., 11:00 - 12:30, Marienstraße 13 C - Hörsaal C, ab 22.05.2019

Do, wöch., 09:15 - 10:45, lab, 23.05.2019 - 11.07.2019

Di, Einzel, 09:00 - 11:00, Coudraystraße 9 A - Hörsaal 6, exam, 16.07.2019 - 16.07.2019

engl. Beschreibung/ Kurzkomentar

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

301013 Advanced Modelling – Calculation/CAE**K. Gürlebeck, D. Legatiuk**

Veranst. SWS: 4

Vorlesung

Mo, Einzel, 13:00 - 15:00, Coudraystraße 13 A - Hörsaal 2, 29.07.2019 - 29.07.2019

Di, wöch., 09:15 - 12:30, Coudraystraße 13 B - Seminarraum 210, Final examination

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 exam (written or oral)

2401012 Applied Finite element methods (Lecture)**C. Könke**

Veranst. SWS: 2

Vorlesung

Mi, wöch., 09:15 - 10:45, Marienstraße 13 C - Hörsaal D, ab 29.05.2019

Fr, wöch., 07:30 - 09:00, Marienstraße 13 C - Hörsaal D, ab 31.05.2019

Fr, Einzel, 10:45 - 12:15, Marienstraße 7 B - Seminarraum 102, Final examination, 26.07.2019 - 26.07.2019

Fr, Einzel, 10:45 - 12:15, Marienstraße 7 B - Seminarraum 103, Final examination, 26.07.2019 - 26.07.2019

Fr, Einzel, 10:45 - 12:15, Marienstraße 7 B - Seminarraum 104, Final examination, 26.07.2019 - 26.07.2019

Fr, Einzel, 10:45 - 12:15, Marienstraße 7 B - Seminarraum 105, Final examination, 26.07.2019 - 26.07.2019

451002+45 Introduction to Optimization / Optimization in Applications**T. Lahmer**

Veranst. SWS: 4

Vorlesung

Fr, Einzel, 09:00 - 11:00, Coudraystraße 13 B - Hörsaal 3, Final examination, 19.07.2019 - 19.07.2019

Fr, Einzel, 09:00 - 11:00, Coudraystraße 13 A - Hörsaal 2, Final examination, 19.07.2019 - 19.07.2019

Mo, wöch., 09:15 - 10:45, Marienstraße 13 C - Hörsaal D

Mi, wöch., 17:00 - 18:30, Marienstraße 7 B - Projektraum 301

Mi, wöch., 17:00 - 18:30, Marienstraße 7 B - Projektraum 302

Beschreibung

Introduction to Optimization (451002 - 3ECTS):

Definitions, Classification of Optimization Problems, Linear Problems, Simplex Method, Duality, Optimization on Graphs Nonlinear Problems: Constrained and unconstrained continuous problems, descent methods and variants

Optimization in Applications (451006 - 3 ECTS):

This course treats topics concerned with the combination of optimization methods and (numerical) models. Typical problems, where such combinations arise, are Calibration of Models, Inverse Problems; (Robust) Structural Optimization (including Shape and Topologyoptimization); Design of Experiments

Bemerkung

The course can be regarded as a continuation of „Introduction to Optimization“, however a visit of that course is not mandatory.

Leistungsnachweis

1 written or oral exam (depending on the number of participants)
„Introduction to Optimization“/ (50%)

1 written or oral exam (depending on the number of participants)
„Optimization in Applications“/ (50%)

205007 Modelling of steel structures and numerical simulation**M. Kraus, S. Mämpel, B. Wittor**

Veranst. SWS: 4

Vorlesung

1-Gruppe Mo, wöch., 13:30 - 15:00, Marienstraße 7 B - Projektraum 301

1-Gruppe Mi, wöch., 07:30 - 09:00, Marienstraße 7 B - Projektraum 301

2-Gruppe Mo, wöch., 13:30 - 15:00, Marienstraße 7 B - Projektraum 302

2-Gruppe Mi, wöch., 07:30 - 09:00, Marienstraße 7 B - Projektraum 302

Mi, Einzel, 09:00 - 11:00, Marienstraße 13 C - Hörsaal D, Final examination, 31.07.2019 - 31.07.2019

Mo, wöch., 13:30 - 15:00, Coudraystraße 13 A - Hörsaal 2

Mi, wöch., 07:30 - 09:00, Marienstraße 13 C - Hörsaal C

engl. Beschreibung/ Kurzkomentar

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

2202004 Multi-Hazard and risk assessment (L + E)**J. Schwarz, S. Beinersdorf**

Veranst. SWS: 4

Vorlesung

Do, Einzel, 09:00 - 11:00, Marienstraße 13 C - Hörsaal C, Final examination, 25.07.2019 - 25.07.2019

Mo, wöch., 15:15 - 18:30, Marienstraße 13 C - Hörsaal C

Mo, wöch., 15:15 - 18:30, Marienstraße 7 B - Projektraum 301

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"

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

Bemerkung

In this course 28 students can take part. It is compulsory for the DAAD-scholarship holders of NHRE intake 2018.

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 3rd, 2019. We will inform you about the decision until April 5th, 2019.

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

Projekt und Präsentation / project and presentation

Prüfung / examination

303002 Simulation Methods in Engineering

C. Koch, M. Artus

Veranst. SWS: 4

Vorlesung

Fr, wöch., 09:15 - 10:45, Marienstraße 13 C - Hörsaal A, lecture, ab 05.04.2019

Fr, wöch., 13:30 - 15:00, Marienstraße 7 B - Projektraum 301, lab (7mal), ab 05.04.2019

Fr, wöch., 13:30 - 15:00, Marienstraße 7 B - Projektraum 302, lab (7mal), ab 05.04.2019

Mo, wöch., 07:30 - 09:00, Marienstraße 7 B - Projektraum 301, lab, ab 08.04.2019

Mo, wöch., 07:30 - 09:00, Marienstraße 7 B - Projektraum 302, lab, ab 08.04.2019

Fr, wöch., 13:30 - 15:00, Marienstraße 7 B - Student Design Studio – SDS 303, lab, 24.05.2019 - 12.07.2019

engl. Beschreibung/ Kurzkomentar

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 simulation 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 requirements for participation: Basic knowledge of programming

Leistungsnachweis

Short group report, group presentation, written exam

401011 Re-examination: Applied Structural Dynamics

V. Zabel

Prüfung

Mi, Einzel, 10:45 - 12:15, Marienstraße 7 B - Seminarraum 102, Re-examination, 17.07.2019 - 17.07.2019

Mi, Einzel, 10:45 - 12:15, Marienstraße 7 B - Seminarraum 103, Re-examination, 17.07.2019 - 17.07.2019

Bemerkung

Re-examination

205014 Re-examination: Design and interpretation of experiments

M. Kraus

Prüfung

Do, Einzel, 14:00 - 16:00, Marienstraße 13 C - Hörsaal D, Re-examination, 01.08.2019 - 01.08.2019

204010 Re-examination: Nonlinear Analysis of Structures under Extreme Loading

H. Timmler

Prüfung

Fr, Einzel, 13:00 - 15:00, Marienstraße 7 B - Seminarraum 206, Re-examination, 02.08.2019 - 02.08.2019

Bemerkung

Re-examination

906016 Re-examination: Secondary Hazards and Risks (land-use, site studies)

T. Wichtmann

Prüfung

Mo, Einzel, 13:00 - 15:00, Coudraystraße 11 C - Seminarraum (geologische Sammlung) 202, 15.07.2019 - 15.07.2019