Bauhaus-Universität Weimar

Vorlesungsverzeichnis

M.Sc. Natural hazards and risk in structural engineering

Sommer 2016

Stand 10.10.2016

M.Sc. Natural hazards and risk in structural engineering

Meeting NHRE

J. Schwarz, B. Bode
Sonstige Veranstaltung
Fr, Einzel, 14:00 - 15:00, Marienstraße 7 B - Seminarraum 206, 4th semester students only !!!, 08.04.2016 - 08.04.2016
Mi, Einzel, 12:30 - 13:30, Marienstraße 13 C - Hörsaal C, 04.05.2016 - 04.05.2016
Mo, Einzel, 15:00 - 16:00, Marienstraße 13 C - Hörsaal D, 2nd + 3rd year students NHRE only!, 04.07.2016 - 04.07.2016
Mo, Einzel, 16:45 - 17:15, Marienstraße 13 C - Hörsaal A, 1st year students NHRE only!, 04.07.2016 - 04.07.2016
Di, Einzel, 13:00 - 14:00, Marienstraße 7 B - Seminarraum 205, 4th semester DAAD-Scholarship holders only !!!, 26.07.2016 - 26.07.2016

Wahlpflichtmodul I

Wahlpflichtmodul II

Wahlpflichtmodul III

Earthquake engineering and structural design

Exam "Earthquake engineering and structural design"

J. Schwarz
Prüfung
Di, Einzel, 13:00 - 16:00, Marienstraße 7 B - Seminarraum 205, 19.07.2016 - 19.07.2016

Experimental structural evaluation and rehabilitation

Exam "Experimental structural evaluation and rehabilitation"

M. Kraus
Prüfung
Do, Einzel, 13:00 - 15:00, Marienstraße 7 B - Seminarraum 205, 28.07.2016 - 28.07.2016

Finite element methods

Structural dynamics

Exam "Structural dynamics"

V. Zabel
Prüfung
Mi, Einzel, 09:00 - 12:00, Marienstraße 7 B - Seminarraum 205, 20.07.2016 - 20.07.2016
Mi, Einzel, 09:00 - 12:00, Marienstraße 7 B - Seminarraum 206, 20.07.2016 - 20.07.2016

Tutorium - Structural dynamics

V. Zabel
Tutorium
Do, wöch., 07:30 - 09:00, Marienstraße 7 B - Seminarraum 205, 12.05.2016 - 12.05.2016
Mi, Einzel, 07:30 - 09:00, Marienstraße 7 B - Seminarraum 205, 18.05.2016 - 18.05.2016
Do, wöch., 07:30 - 09:00, Marienstraße 7 B - Seminarraum 205, ab 26.05.2016

Geo- and hydrotechnical engineering

2200002 Soil Mechanics

K. Witt, F. Wuttke Veranst. SWS: 4
Vorlesung
Di, wöch., 13:30 - 15:00, Coudraystraße 9 A - Hörsaal 6
Di, wöch., 15:15 - 16:45, Coudraystraße 9 A - Hörsaal 6

Kommentar
Problematic Soils: Type of soils, minerals, natural soils, expansive soils, collapsible soils, physical behaviour, physico-chemical behaviour, structure, fabric, saturated soils, unsaturated soils, volume-mass relationships, shrinkage behaviour, consolidation behaviour, compaction, effective stress, stress state variables, constitutive relations, shear strength, measurement of positive pore water pressure, negative pore water pressure (laboratory, field), soil-water characteristic curves, saturated and unsaturated hydraulic conductivity, sa-turated and unsaturated shear strength, volume change behaviour of problematic soils, earth pressure theory, bearing capacity, slope stability, constitutive modelling, analysis and design of structures on problematic soils. Geotechnical Earthquake Engineering: Artificial and natural earthquake loads (different scales) and their change (magnitude and frequencies) are described when crossing sediment layers. Furthermore the effects of these earthquakes on geotechnical and building constructions as well as geo-seismic effects (liquefaction, landslides, and settlements) are analysed. We use the special site effects for the determination of site dependent response spectra and the microzonation of af-fected areas. For all site response analyses the description of the soil properties and the realistic soil parameters will be needed. That means the pre-failure and failure characteristics of the soil, i.e. the stiffness and damping for all rates of strain or the liquefaction potential. For these purposes experimental methods will be discussed just as recent aspects of the description of soil parameter in the modern soil mechanics. Practical exercises on the field vibration measurements and there evaluation will be performed. Design principles for foundations and buildings in earthquake affected regions are treated, further modelling and methods of analysis for special geotechnical structures under seismic loads taking into account effects of soil-structure interaction.

Leistungsnachweis
Klausur oder mündliche Prüfung

2420006 Flood Management

H. Hack, H. Maiwald Veranst. SWS: 2
Vorlesung
Mo, Einzel, 15:15 - 16:45, Marienstraße 13 C - Hörsaal D, 04.04.2016 - 04.04.2016
Mo, wöch., 15:15 - 16:45, Marienstraße 13 C - Hörsaal C
Mi, wöch., 11:00 - 12:30, Marienstraße 13 C - Hörsaal C

Bemerkung
Vorlesungen in englischer Sprache "Flood Management"

Kommentar

Risikomanagement im Hochwasserschutz; hydrologische Bemessungsgrundlagen;hydraulische Berechnungen; technischer Hochwasserschutz; Hochwasserschutz durch Überschwemmungsflächen; Hochwasservorsorge.

Leistungsnachweis

Klausur oder mündliche Prüfung

Exam "Geo- and hydrotechnical engineering - Part: Soil mechanics"

K. Witt
Prüfung
Di, Einzel, 09:00 - 11:00, Coudraystraße 11 C - Seminarraum 101, 26.07.2016 - 26.07.2016
Di, Einzel, 09:00 - 11:00, Coudraystraße 11 C - Seminarraum (geologische Sammlung) 202, 26.07.2016 - 26.07.2016
Di, Einzel, 09:00 - 11:00, Coudraystraße 13 A - Seminarraum 115, 26.07.2016 - 26.07.2016

Geographical Information Systems (GIS) and building stock survey

Hazard projects and advanced geotechnologies

2340006 Hazard projects and advanced geotechnologies

J. Schwarz Veranst. SWS: 4
Projekt
Do, Einzel, 11:00 - 12:30, Marienstraße 13 C - Hörsaal C, 14.04.2016 - 14.04.2016
Mo, Einzel, 15:15 - 18:30, Marienstraße 13 C - Hörsaal D, 02.05.2016 - 02.05.2016
Di, Einzel, 09:15 - 12:30, Marienstraße 13 C - Hörsaal C, 03.05.2016 - 03.05.2016
Do, Einzel, 11:00 - 12:30, Marienstraße 13 C - Hörsaal C, 12.05.2016 - 12.05.2016
Do, wöch., 11:00 - 12:30, Marienstraße 13 C - Hörsaal C, 19.05.2016 - 19.05.2016
Do, wöch., 13:30 - 16:45, Marienstraße 13 C - Hörsaal C
Do, wöch., 17:00 - 18:30, Marienstraße 7 B - Projektraum 301

Bemerkung
Die Durchführung der Lehrveranstaltung ist abhängig von der Anzahl der Interessenten. Interessenten wenden sich betreffs Terminabstimmung bitte an die für die Lehrveranstaltung verantwortliche Professur. Die Veranstaltungen finden im Comp. lab Luna Pool Marienstraße 7 statt.

Leistungsnachweis
Projekt und Präsentation

Exam "Hazard projects and advanced geotechnologies"

J. Schwarz
Prüfung
Fr, Einzel, 09:00 - 12:00, Marienstraße 13 C - Hörsaal A, 29.07.2016 - 29.07.2016

Life-lines engineering

2310013 Life-lines engineering (Exercise)

G. Morgenthal Veranst. SWS: 2
Seminar
1-Gruppe Fr, wöch., 13:30 - 15:00, Marienstraße 7 B - Seminarraum 205, Group A
1-Gruppe Fr, wöch., 13:30 - 15:00, Marienstraße 7 B - Projektraum 301
2-Gruppe Fr, wöch., 15:15 - 16:45, Marienstraße 7 B - Seminarraum 205, Group B
2-Gruppe Fr, wöch., 15:15 - 16:45, Marienstraße 7 B - Projektraum 301

Kommentar

Design and construction of bridges in earthquake endangered regions, seismic design philosophies for bridges, specifics of seismic loads on bridges, possibilities and application of seisimic isolation, experimental results, consideration of a simply supported bridge with different mechanical characeristics on a real earthquake record

Leistungsnachweis
Klausur oder mündliche Prüfung

2310013 Life-lines engineering (Lecture)

G. Morgenthal, C. Könke Veranst. SWS: 4
Integrierte Vorlesung
Fr, wöch., 09:15 - 12:30, Marienstraße 13 C - Hörsaal C

Kommentar
Design and construction of bridges in earthquake endangered regions, seismic design philosophies for bridges, specifics of seismic loads on bridges, possibilities and application of seisimic isolation, experimental results, consideration of a simply supported bridge with different mechanical characeristics on a real earthquake record

Leistungsnachweis
Klausur oder mündliche Prüfung

Exam "Life-lines engineering"

G. Morgenthal
Prüfung
Mo, Einzel, 09:00 - 12:00, Marienstraße 7 B - Seminarraum 105, 18.07.2016 - 18.07.2016
Mo, Einzel, 09:00 - 12:00, Marienstraße 7 B - Seminarraum 106, 18.07.2016 - 18.07.2016
Mo, Einzel, 09:00 - 12:00, Marienstraße 7 B - Seminarraum 205, 18.07.2016 - 18.07.2016
Mo, Einzel, 09:00 - 12:00, Marienstraße 7 B - Seminarraum 206, 18.07.2016 - 18.07.2016

Primary hazards and risks

Exam "Primary hazards and risks - Part: Seismic monitoring"

J. Schwarz
Prüfung
Fr, Einzel, 08:30 - 11:00, Marienstraße 7 B - Seminarraum 205, 22.07.2016 - 22.07.2016

Exam "Primary hazards and risks - Part: Wind risk mitigation"

J. Schwarz
Prüfung
Fr, Einzel, 11:30 - 13:00, Marienstraße 7 B - Seminarraum 205, 22.07.2016 - 22.07.2016
Fr, Einzel, 11:30 - 13:00, 22.07.2016 - 22.07.2016

Disastermanagement and mitigation strategies

Exam "Project- and disaster management"

H. Bargstädt
Prüfung
Di, Einzel, 13:00 - 14:30, Marienstraße 7 B - Seminarraum 205, 02.08.2016 - 02.08.2016

Stochastics and risk assessment

Exam "Stochastics and risk assessment - Part: Mathematical simulation"

T. Lahmer
Prüfung
Mo, Einzel, 13:00 - 15:00, Marienstraße 7 B - Seminarraum 205, 01.08.2016 - 01.08.2016

Exam "Stochastics and risk assessment - Part: Signal analysis"

R. Illge
Prüfung
Mi, Einzel, 10:00 - 11:00, Marienstraße 7 B - Seminarraum 205, 27.07.2016 - 27.07.2016

Structural engineering

Exam "Structural engineering"

G. Morgenthal
Prüfung
Do, Einzel, 09:00 - 12:00, Marienstraße 7 B - Seminarraum 205, 04.08.2016 - 04.08.2016
Do, Einzel, 09:00 - 12:00, Marienstraße 7 B - Seminarraum 206, 04.08.2016 - 04.08.2016

Elective compulsory modules

2100001 Experimental Structural Dynamics and building monitoring (Project)

V. Zabel Veranst. SWS: 4
Projekt
Di, wöch., 07:30 - 12:30, Marienstraße 7 B - Projektraum 301

Bemerkung
14 students NHRE only

Kommentar

The course conveys skills that are necessary for an experimental analysis of the dynamic properties of a structure. This includes the theory of modal models and frequency response functions, theoretical background of signal processing and modal parameter extraction techniques. The major aspects concerning dynamic measurements such as excitation, types of sensors and their application as well as time and frequency functions are discussed. Practical exercises using modern measurement systems are part of the course. The students will also be introduced to the development of virtual instruments using the graphical programming environment LabVIEW for both data acquisition and signal analysis.

Voraussetzungen

Structural dynamics

Leistungsnachweis

Project report, presentation

Excursion from 11.05 to 15.05.2015 to University of Thessaloniki

2110001 Finite element methods

T. Rabczuk Veranst. SWS: 4
Integrierte Vorlesung
Mi, wöch., 09:15 - 10:45, Marienstraße 7 B - Seminarraum 205
Do, wöch., 09:15 - 10:45, Marienstraße 7 B - Projektraum 301

Kommentar

Gemischte Finite Elemente Modelle, lineare FE-Analyse in der Strukturmechanik, geometrisch und physikalisch nichtlineare Effekte; Iterative Lösungen von nichtlinearen Gleichungssystemen, Fehlerindikatoren und adaptive FE-Verfahren.

Mixed finite element models; non-linear finite element analysis in solid mechanics (teometrically and physicalle non-linear methods); solution of equlibrium uquations; error estimates and adaptive finite element methods

Leistungsnachweis

Klausur oder mündliche Prüfung

2110016 Modelling of Steel structures and Numerical simulation

M. Kraus, S. Mämpel, B. Wittor Veranst. SWS: 4
Vorlesung
Di, unger. Wo, 17:00 - 18:30, Marienstraße 7 B - Projektraum 301, ab 12.04.2016
Mo, wöch., 11:00 - 12:30, Marienstraße 7 B - Projektraum 301
Mo, wöch., 11:00 - 12:30, Coudraystraße 9 A - Hörsaal 6
Mo, wöch., 13:30 - 15:00, Coudraystraße 13 A - Hörsaal 2

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

2204015 Model Validation and Simulation - "Project Wind Engineering"

G. Morgenthal Veranst. SWS: 4
Projekt
Mi, wöch., 13:30 - 16:45, Marienstraße 7 B - Seminarraum 205

2451007 Stochastic Simulation Techniques and Structural Reliability

T. Lahmer Veranst. SWS: 4
Integrierte Vorlesung

Mi, wöch., 15:15 - 16:45, Marienstraße 7 B - Seminarraum 106

Bemerkung

The lecture consists of weekly lectures by Prof. Tom Lahmer (Bauhaus University Weimar) throughout the semester and an intensive practical training (Blockkurs) on applications by Dr. Thomas Most (DYNARDO, Weimar)
Please indicate your interest in the course via an E-Mail to Mrs. Terber (marlies.terber@uni-weimar.de) by briefly citing the title of the lecture and providing your name until **April 7th 2015** as this will make the organization of rooms, course material, etc. much easier.

The dates when the blocks will take place will be announced by the middle of April.

Kommentar

Soils, rocks and materials like concrete are in the natural state among the most variable of all engineering materials. Engineers need to deal with this variability and make decisions in situations of little data, i.e. under high uncertainties. The course aims in providing the students with techniques state of the art in risk assessment (structural reliability) and stochastic simulation.

The course topics comprise
- (a very brief review) of probability theory
- discrete and continuous random processes and fields
- estimation of statistical parameters
- stochastic simulation techniques (Monte Carlo Samplings)
- reliability-based design
- sensitivity analysis
- structural safety
- Risk assessment and stochastic modeling in practice

The lecture consists of weekly lectures by Prof. Tom Lahmer (Bauhaus University Weimar) throughout the semester and an intensive practical training (Blockkurs) on applications by Dr. Thomas Most (DYNARDO, Weimar)

Voraussetzungen

Basic knowledge in probability theory

Leistungsnachweis
Klausur oder mündliche Prüfung

Exam "Finite element methods"

T. Rabczuk
Prüfung
Do, Einzel, 09:00 - 11:00, Marienstraße 7 B - Seminarraum 205, 21.07.2016 - 21.07.2016

Exam "Modelling of steel structures and numerical simulation"

M. Kraus
Prüfung
Mi, wöch., 13:00 - 15:00, Marienstraße 13 C - Hörsaal B, 03.08.2016 - 03.08.2016

Exam "Nonlinear analysis of structures under extreme loading"

G. Morgenthal
Prüfung

Fr, Einzel, 09:00 - 11:00, Marienstraße 7 B - Seminarraum 205, 05.08.2016 - 05.08.2016

Model Validation and Simulation - "Project Evaluation of existing structures ..."

L. Abrahamczyk Veranst. SWS: 4

Projekt

Do, wöch., 11:00 - 12:30, Marienstraße 7 B - Projektraum 301