

Vorlesungsverzeichnis

M.Sc. Digital Engineering

Winter 2018/19

Stand 13.03.2019

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M.Sc. Digital Engineering

Faculty Welcome for Master's Students Digital Engineering

Monday, 8th October 2018, 11.00 a.m., room 015, Bauhausstraße 11

Project fair

Monday, 8th October 2018, 5.15 p.m., Lecture Hall A, Marienstraße 13C

Fundamentals (F)

Advanced Numerical Mathematics

Algorithms and Datastructures

Applied Mathematics and Stochastics

2301012 Applied mathematics & Stochastics(Exercise)

T. Lahmer, D. Legatiuk

Veranst. SWS: 2

Seminar

Mo, wöch., 17:00 - 18:30, Marienstraße 13 C - Hörsaal B, ab 15.10.2018

2301012-1 Applied mathematics (Lecture)

K. Gürlebeck

Veranst. SWS: 2

Vorlesung

Mo, Einzel, 13:00 - 16:00, Marienstraße 13 C - Hörsaal A, Final examination, 11.02.2019 - 11.02.2019

Mo, Einzel, 13:00 - 16:00, Marienstraße 13 C - Hörsaal B, Final examination, 11.02.2019 - 11.02.2019

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

Beschreibung

Applied mathematics:

Fundamentals of linear algebra, eigenvalue problems, fixed point principles, solvers; Fourier series, convergence, Fourier transform, Laplace transform; Solution of initial value problems, boundary value problems and eigenvalue problems for ordinary differential equations; All topics are discussed from the mathematical point of view and their implementation in MAPLE will be studied. :

Leistungsnachweis

Klausur oder mündliche Prüfung

2301012-2 Stochastics for risk assessment (Lecture) / Mathematics for risk management (MBM)

T. Lahmer

Veranst. SWS: 2

Vorlesung

Mo, wöch., 13:30 - 15:00, Marienstraße 13 C - Hörsaal B, Prof. Lahmer

Beschreibung

Stochastics for risk assessment:

Introduction to probability theory with focus on situations characterized by low probabilities. Random events, discrete and continuous random variables and associated distributions. Descriptive statistics, parameter estimation. Risk Assessment by means of FORM and Monte Carlo Simulations. Introduction to reliability theory: Extreme value distributions; stochastic modeling with software tools e.g. MATLAB, Octave, Excel, R. Reliability Analysis of Systems. Catastrophic events + risk problems, Applications

Leistungsnachweis

Klausur oder mündliche Prüfung

Nonlinear Continuum Mechanics**402009 Nonlinear Continuum Mechanics****T. Rabczuk**

Veranst. SWS: 4

Vorlesung

Di, wöch., 11:00 - 12:30, Coudraystraße 13 A - Hörsaal 2, ab 09.10.2018

Do, wöch., 17:00 - 18:30, Marienstraße 13 C - Hörsaal C, Lecture, ab 11.10.2018

Di, Einzel, 14:00 - 16:00, Marienstraße 7 B - Seminarraum 205, exam, 05.02.2019 - 05.02.2019

Beschreibung

Nichtlineare Kontinuumsmechanik

engl. Beschreibung/ Kurzkomentar

1. Motivation and Notations
2. Introduction to tensor algebra and tensor analysis
3. Kinematics of continua
 - 3.1 Lagrangian and Eulerian description of motion
 - 3.2 Deformation and Deformation gradient
 - 3.3 Velocity and velocity gradient
 - 3.4 Strain measures
 - 3.5 Deformation-, rotation- and strain-velocities
 - 3.6 Geometrical linearization of kinematic quantities
4. Kinetics and governing equations
 - 4.1 Classification of external load
 - 4.2 Stress vector and stress tensor
 - 4.3 Stress measures
5. Balance Equations
 - 5.1 Balance of mass
 - 5.2 Balance of moment and momentum
 - 5.3 Balance of energy
 - 5.4 Invariant balances of energy and principle of virtual work
 - 5.5 Second law of thermodynamics
6. Constitutive models
 - 6.1 Elasticity for isotropic materials
 - 6.2 Introduction to plasticity theory
 - 6.3 Introduction to continuum damage mechanics
7. Initial Boundary Value Problems and applications

Leistungsnachweis

Klausur 120 min

Object-oriented Modeling and Programming in Engineering**303005 Object-oriented Modeling and Programming in Engineering****C. Koch, M. Artus**

Veranst. SWS: 4

Vorlesung

Mo, wöch., 15:15 - 16:45, Coudraystraße 13 B - Seminarraum 210, ab 08.10.2018

Fr, wöch., 09:15 - 10:45, Marienstraße 7 B - Projektraum 301, ab 19.10.2018

Fr, wöch., 09:15 - 10:45, Marienstraße 7 B - Projektraum 302, ab 19.10.2018

Mo, Einzel, 09:00 - 11:00, Marienstraße 13 C - Hörsaal B, exam, 04.02.2019 - 04.02.2019

Beschreibung

Objektorientierte Modellierung und Programmierung für Ingenieure

In diesem Modul wird fundamentales Wissen vermittelt, um objektorientierte Softwarelösungen für Ingenieuraufgaben zu konzipieren und zu implementieren. Dies beinhaltet Fähigkeiten zur Analyse von Ingenieurproblemen, um entsprechende objektorientierte Modelle zu erzeugen und geeignete Algorithmen auszuwählen. Die verwendete Programmiersprache ist Java. Da die Basiskonzepte allgemeingültig beschrieben werden, werden die Studierenden in die Lage versetzt, auch andere modernen Programmiersprachen zu einzusetzen.

Inhalte:

- Kontrollstrukturen (alternatives, loops, sequences)
- Grundlegende Datenstrukturen und Algorithmen
- Prinzipien der objektorientierten Softwareentwicklung (Datenkapselung, Vererbung, Polymorphie)
- Unified Modeling Language als Werkzeug für Softwareentwurf und -dokumentation
- Entwicklung grafischer Nutzerschnittstellen mithilfe des Model-View-Controller-Entwurfsmusters

engl. Beschreibung/ Kurzkomentar

Object-oriented Modeling and Programming in Engineering

This module covers the basic knowledge needed to develop and implement object-oriented software solutions for engineering problems. This includes the ability to analyse an engineering problem, so that corresponding object-oriented models can be created and suitable algorithms can be selected. The programming language used in this module is Java. However, the since fundamental concepts are described in general, students will be able to program in other modern programming languages.

Content:

- Essential programming constructs (alternatives, loops, sequences)
- Fundamental data structures and algorithms
- Principles of object oriented software development (encapsulation, inheritance and polymorphism)
- The Unified Modeling Language as a tool for software design and documentation

Development of graphical user interfaces using the Model-View-Controller pattern

Leistungsnachweis

schriftliche Klausur

Software Engineering

417290000 Software Engineering (M.Sc.)**F. Echter**

Veranst. SWS: 3

Vorlesung

Di, wöch., 09:15 - 10:45, Marienstraße 13 C - Hörsaal B, Lecture, ab 09.10.2018

Do, wöch., 13:30 - 15:00, Coudraystraße 13 A - Hörsaal 2, Lab, ab 11.10.2018

Do, Einzel, 09:00 - 11:00, Steubenstraße 6, Haus F - Hörsaal K20, exam, 07.02.2019 - 07.02.2019

engl. Beschreibung/ Kurzkomentar

Software Engineering (M.Sc.)

Developing software requires more than just programming skills. Answering conceptual questions is perhaps even more important than excellent knowledge of a programming language. This course introduces participants to the basics of structured software development. During the course of a larger development project, the presented techniques will be exercised in practice. Topics include all phases of the development process, such as requirements analysis, UML modelling, design patterns or agile development.

Voraussetzungen

programming skills

Leistungsnachweis

Exercise assignments + written exam

Statistics**Structural Dynamics****2401007-2 Structural Dynamics (Exercise)****V. Zabel**

Veranst. SWS: 1

Seminar

1-Gruppe Di, wöch., 07:30 - 09:00, Marienstraße 7 B - Seminarraum 205, Tutorium - Group A, ab 06.11.2018

1-Gruppe Mi, wöch., 07:30 - 09:00, Marienstraße 7 B - Projektraum 301, Group A, bis 05.12.2018

2-Gruppe Di, wöch., 07:30 - 09:00, Marienstraße 7 B - Seminarraum 103, Tutorium - Group B, ab 06.11.2018

2-Gruppe Di, wöch., 09:15 - 10:45, Marienstraße 7 B - Projektraum 302, Group B, bis 04.12.2018

3-Gruppe Di, wöch., 07:30 - 09:00, Marienstraße 7 B - Seminarraum 206, Tutorium - Group C, ab 06.11.2018

3-Gruppe Mi, wöch., 09:15 - 10:45, Marienstraße 7 B - Projektraum 301, Group C, bis 05.12.2018

4-Gruppe Mi, wöch., 07:30 - 09:00, Marienstraße 7 B - Seminarraum 206, Tutorium - Group D, ab 07.11.2018

4-Gruppe Do, Einzel, 11:00 - 12:30, Coudraystraße 13 D - Pool Fak. B 009, 29.11.2018 - 29.11.2018

4-Gruppe Do, wöch., 11:00 - 12:30, Marienstraße 7 B - Projektraum 302, Group D, bis 06.12.2018

2401011 Applied Structural Dynamics (Exercise)**R. Abadi**

Veranst. SWS: 1

Seminar

1-Gruppe Mi, wöch., 07:30 - 09:00, Marienstraße 7 B - Projektraum 301, Group A, ab 12.12.2018

2-Gruppe Di, wöch., 09:15 - 10:45, Marienstraße 7 B - Projektraum 302, Group B, ab 11.12.2018

3-Gruppe Mi, wöch., 09:15 - 10:45, Marienstraße 7 B - Projektraum 301, Group C, ab 12.12.2018

4-Gruppe Do, wöch., 11:00 - 12:30, Marienstraße 7 B - Projektraum 302, Group D, ab 13.12.2018

2401011 Applied Structural Dynamics (Lecture)

V. Zabel

Veranst. SWS: 2

Vorlesung

Mi, wöch., 11:00 - 12:30, Marienstraße 13 C - Hörsaal C, ab 05.12.2018

Do, wöch., 09:15 - 10:45, Marienstraße 13 C - Hörsaal C, ab 06.12.2018

Mi, Einzel, 10:45 - 12:15, Marienstraße 7 B - Seminarraum 205, Final examination, 06.02.2019 - 06.02.2019

Mi, Einzel, 10:45 - 12:15, Marienstraße 7 B - Seminarraum 206, Final examination, 06.02.2019 - 06.02.2019

2401014 Structural Dynamics (Lecture)**V. Zabel**

Veranst. SWS: 2

Vorlesung

Mi, Einzel, 09:00 - 10:30, Marienstraße 7 B - Seminarraum 103, Final examination, 06.02.2019 - 06.02.2019

Mi, Einzel, 09:00 - 10:30, Marienstraße 7 B - Seminarraum 205, Final examination, 06.02.2019 - 06.02.2019

Mi, Einzel, 09:00 - 10:30, Marienstraße 7 B - Seminarraum 206, Final examination, 06.02.2019 - 06.02.2019

Mi, Einzel, 09:00 - 10:30, Marienstraße 7 B - Seminarraum 105, Final examination, 06.02.2019 - 06.02.2019

Mi, Einzel, 09:00 - 10:30, Marienstraße 7 B - Seminarraum 106, Final examination, 06.02.2019 - 06.02.2019

Mi, wöch., 11:00 - 12:30, Marienstraße 13 C - Hörsaal C, bis 28.11.2018

Do, wöch., 09:15 - 10:45, Marienstraße 13 C - Hörsaal C, bis 29.11.2018

Beschreibung**Structural Dynamics:** (50% of semester course time)

SDOF systems: free vibrations, harmonic, impulse and general excitation for undamped and damped systems, Impulse response function, frequency response function, base excitation, time step analysis: central difference and Newmark methods; MDOF systems: modal analysis, modal superposition, modal damping, Rayleigh damping, Frequency response functions, state-space models

Voraussetzungen

Bachelor Civil Engineering

Leistungsnachweis**1 written exam:** „Fundamentals of structural dynamics“/ 90 min (50%)**Structural Engineering Models****Modelling (M)****4- und 5D-Building Information Modeling (BIM)****Advanced Building Information Modeling****Advanced Modelling - Calculation****Collaborative Data Management****Computer models for physical processes – from observation to simulation****Introduction to Optimization****Modelling in the development process**

Optimization in Applications

Simulation and Validation (SaV)

Design and Interpretation of Experiments / Signal Processing

2205014 Design and interpretation of experiments

M. Kraus, T. Lahmer, S. Mämpel

Veranst. SWS: 2

Integrierte Vorlesung

Di, wöch., 11:00 - 12:30, Marienstraße 13 C - Hörsaal B, ab 27.11.2018

Do, Einzel, 14:00 - 16:00, Marienstraße 13 C - Hörsaal B, Final examination, 21.02.2019 - 21.02.2019

Di, wöch., 11:00 - 12:30, Marienstraße 7 B - Seminarraum 205, Signal processing, Design of experiments and system identification

Di, wöch., 13:30 - 15:00, Marienstraße 13 C - Hörsaal C, Experiments in structural engineering

Experimental Structural Dynamics

Extended Finite Elements and Mesh Free Methods

Fundamentals of structural health monitoring (SHM) and intelligent structural systems

2907004 Fundamentals of structural health monitoring (SHM) and intelligent structural systems

K. Smarsly, J. Wagner, S. Ibañez Sánchez, M. Mirboland, L.

Thiebes, M. Steiner

Integrierte Vorlesung

Mi, wöch., 09:15 - 12:30, Coudraystraße 13 D - Pool-Raum 010

Beschreibung

Structural health monitoring (SHM) and smart structural systems, also referred to as "smart structures" or "intelligent infrastructure", are primary subjects of this course: Basic principles of modern SHM are taught; also, concepts of smart structural systems, which are capable of self-assessing their structural condition with a certain degree of intelligence, are elucidated in more detail. Measuring techniques, data acquisition systems, data management and processing as well as data analysis algorithms will be discussed. Furthermore, approaches towards autonomous and embedded computing, to be used for continuous (remote) monitoring of civil infrastructure, are presented. Throughout the course, a number of illustrative examples is shown, demonstrating how state-of-the-art SHM systems and smart structural systems are implemented. In small groups, the students design structural health monitoring systems that are validated in the field. The outcome of every group is to be documented in a paper, which is graded, together with an oral examination, at the end of the course. Prerequisites for this course: Object-oriented modeling and Java programming language. Requirements for examination: (i) Development of a wireless SHM system, (ii) participation in the project work (including the laboratory test), (iii) written paper. No previous experience in the above fields is required by the students; limited enrollment.

Bemerkung

Please note: Time and location will be announced. Enrollment must be done online.

Information on how to enroll will be provided in the first lecture on October 11, 2017 (9:15am), Coudraystr. 13D, Orion-Pool.

Voraussetzungen

Object-oriented modeling and Java programming language.

Basic knowledge in structural dynamics would be an advantage.

Leistungsnachweis

Oral examination and written paper.

Linear FEM

Modelling of Steel Structures and Numerical Simulation

Nonlinear FEM

Process modelling and simulation in logistics and construction

Simulation Methods in Engineering

Stochastic Simulation Techniques and Structural Reliability

Structural Health Monitoring

Visualization and Data Science (VaDS)

Image Analysis and Object Recognition

Introduction to Machine Learning

4439110 Introduction to Machine Learning

B. Stein, M. Völske

Veranst. SWS: 3

Vorlesung

Do, wöch., 09:15 - 10:45, Marienstraße 13 C - Hörsaal A, Lecture, 11.10.2018 - 11.10.2018

Do, wöch., 11:00 - 12:30, Marienstraße 13 C - Hörsaal C, Lab class, ab 11.10.2018

Do, wöch., 09:15 - 10:45, Karl-Haußknecht-Straße 7 - Hörsaal (IT-AP), ab 18.10.2018

Do, wöch., 11:00 - 12:30, Karl-Haußknecht-Straße 7 - Hörsaal (IT-AP), ab 18.10.2018

Di, Einzel, 09:00 - 11:00, Steubenstraße 6, Haus F - Hörsaal K20, exam, 12.02.2019 - 12.02.2019

engl. Beschreibung/ Kurzkomentar

Introduction to Machine Learning

Students will learn to understand machine learning as a guided search in a space of possible hypotheses. The mathematical means to formulate a particular hypothesis class determines the learning paradigm, the discriminative power of a hypothesis, and the complexity of the learning process. Aside from foundations of supervised learning also an introduction to unsupervised learning is given. The lecture introduces concepts, algorithms, and theoretical backgrounds. The accompanying lab treats both theoretical and applied tasks to deepen the understanding of the field. Team work (2-3 students) is appreciated.

Bemerkung

Der Starttermin wird zum Anfang des Semesters auf der Webseite der Professur bekannt gegeben.

The date of the first lecture will be announced on the websites of the professorship, at the beginning of the semester.

Leistungsnachweis

Klausur / written exam

Photogrammetric Computer Vision**4256303 Photogrammetric Computer Vision****V. Rodehorst, M. Kaisheva**

Veranst. SWS: 3

Vorlesung

Mo, Einzel, 13:30 - 15:00, Bauhausstraße 11 - Seminarraum 015, first lecture , 08.10.2018 - 08.10.2018

Mo, wöch., 11:00 - 12:30, Lecture LH C, Marienstr. 13 C, ab 15.10.2018

Mo, wöch., 13:00 - 15:00, Bauhausstraße 11 - Seminarraum 015, Lab class, ab 29.10.2018

Beschreibung

Die Vorlesung gibt eine Einführung in die Grundlagen der Sensor-Orientierung und 3D-Rekonstruktion. Das Ziel ist ein Verständnis der Prinzipien, Methoden und Anwendungen der bildbasierten Vermessung. Behandelt werden unter anderem die algebraische projektive Geometrie, Abbildungsgeometrie, Kalibrierung, Orientierungsverfahren, Stereo-Bildzuordnung und weitere Verfahren zur Oberflächenrekonstruktion.

engl. Beschreibung/ Kurzkomentar

Photogrammetric Computer Vision

The lecture gives an introduction to the basic concepts of sensor orientation and 3D reconstruction. It covers topics such as the algebraic projective geometry, imaging geometry, calibration, orientation methods, stereo image matching and other surface reconstruction methods.

Voraussetzungen

Einführung in die Informatik, Grundlagen Programmiersprachen

Leistungsnachweis

Erfolgreiche Bearbeitung der Übungen und Klausur

Search Algorithms**Search-Based Software Engineering****Software Product Line Engineering****Visualization****Elective Modules****402009 Nonlinear Continuum Mechanics****T. Rabczuk**

Veranst. SWS: 4

Vorlesung

Di, wöch., 11:00 - 12:30, Coudraystraße 13 A - Hörsaal 2, ab 09.10.2018

Do, wöch., 17:00 - 18:30, Marienstraße 13 C - Hörsaal C, Lecture, ab 11.10.2018

Di, Einzel, 14:00 - 16:00, Marienstraße 7 B - Seminarraum 205, exam, 05.02.2019 - 05.02.2019

Beschreibung

Nichtlineare Kontinuumsmechanik

engl. Beschreibung/ Kurzkomentar

1. Motivation and Notations
2. Introduction to tensor algebra and tensor analysis
3. Kinematics of continua
 - 3.1 Lagrangian and Eulerian description of motion
 - 3.2 Deformation and Deformation gradient
 - 3.3 Velocity and velocity gradient
 - 3.4 Strain measures
 - 3.5 Deformation-, rotation- and strain-velocities
 - 3.6 Geometrical linearization of kinematic quantities
4. Kinetics and governing equations
 - 4.1 Classification of external load
 - 4.2 Stress vector and stress tensor
 - 4.3 Stress measures
5. Balance Equations
 - 5.1 Balance of mass
 - 5.2 Balance of moment and momentum
 - 5.3 Balance of energy
 - 5.4 Invariant balances of energy and principle of virtual work
 - 5.5 Second law of thermodynamics
6. Constitutive models
 - 6.1 Elasticity for isotropic materials
 - 6.2 Introduction to plasticity theory
 - 6.3 Introduction to continuum damage mechanics
7. Initial Boundary Value Problems and applications

Leistungsnachweis

Klausur 120 min

417230000 Virtual Reality – Final Project

B. Fröhlich, A. Kulik, A. Kunert, T. Weißker
Independent Study

Veranst. SWS: 1

Beschreibung

Im Abschlussprojekt der Vorlesung „Virtual Reality“ sollen die Teilnehmer die erlangten theoretischen und praktischen Fertigkeiten auf den Entwurf, die Implementierung und die Präsentation eines eigenständigen kleinen Forschungsprojektes anwenden. Dazu soll zunächst ein Projektkonzept entwickelt werden, welches dann mit einer 3D-Engine zu implementieren und abschließend in einem Vortrag zu präsentieren ist. Dies ist eine wertvolle Gelegenheit, mit der modernen VR-Hardware in unserem Lab (Head-Mounted Displays, Multi-User-Projektionssystemen oder Multi-Touch-Tabletops) an einer spannenden Fragestellung Ihrer Wahl zu arbeiten.

engl. Beschreibung/ Kurzkomentar

Virtual Reality – Final Project

This final project requires the participants to apply the obtained theoretical and practical skills of the course "Virtual Reality" in the design, implementation and presentation of an individual small research project. In particular, you will be asked to develop a concept, come up with an effective and efficient implementation in a 3D engine and present

your results in a concise talk. This is an invaluable opportunity to work on an interesting topic of your choice with the state-of-the-art VR-hardware available in our lab such as head-mounted displays, multi-user projection systems and multi-touch tabletops. i

Voraussetzungen

Erfolgreiche Teilnahme an der Veranstaltung „[Virtual Reality](#)”

Successful completion of the course „[Virtual Reality](#)”

Leistungsnachweis

Abschlusspräsentation

Final Presentation

417290000 Software Engineering (M.Sc.)

F. Echtler

Veranst. SWS: 3

Vorlesung

Di, wöch., 09:15 - 10:45, Marienstraße 13 C - Hörsaal B, Lecture, ab 09.10.2018

Do, wöch., 13:30 - 15:00, Coudraystraße 13 A - Hörsaal 2, Lab, ab 11.10.2018

Do, Einzel, 09:00 - 11:00, Steubenstraße 6, Haus F - Hörsaal K20, exam, 07.02.2019 - 07.02.2019

engl. Beschreibung/ Kurzkomentar

Software Engineering (M.Sc.)

Developing software requires more than just programming skills. Answering conceptual questions is perhaps even more important than excellent knowledge of a programming language. This course introduces participants to the basics of structured software development. During the course of a larger development project, the presented techniques will be exercised in practice. Topics include all phases of the development process, such as requirements analysis, UML modelling, design patterns or agile development.

Voraussetzungen

programming skills

Leistungsnachweis

Exercise assignments + written exam

4526501 Academic English Part One

H. Atkinson

Veranst. SWS: 2

Kurs

Di, wöch., 17:00 - 18:30, Bauhausstraße 11 - Seminarraum 015, ab 06.11.2018

Di, Einzel, 17:00 - 18:30, Bauhausstraße 11 - Seminarraum 015, exam, 12.02.2019 - 12.02.2019

engl. Beschreibung/ Kurzkomentar

Academic English Part One

This is the first part of a two-part course which aims to improve your ability to express yourself clearly in written English and to develop a suitably coherent academic writing style. Part One concentrates mainly on structure in writing academic articles, essays and reports. We begin by examining the structure of individual paragraphs and move on to extended texts of various types (e.g. process essays, cause/effect, comparison/contrast, etc.). Particular attention is paid to connectives, i.e. transitional phrases and constructions which help you link ideas and paragraphs in a logical, systematic way.

Bemerkung

You are advised to take Part One first, although it is possible to take both parts concurrently (i.e. in the same semester) or in reverse order.

Voraussetzungen

Registration for first time participants

First time participants are required to present the B2 English Level Certificate before the beginning of the course. Howard Atkinson therefore offers the following consultation hours:

24. October 2018, 10:00-12:00 a.m., room 001, Bauhausstraße 11

30. October 2018, 16:00-18:00 p.m., room 001, Bauhausstraße 11

Leistungsnachweis

written examination

4526502 Academic English Part Two**H. Atkinson**

Veranst. SWS: 2

Kurs

Mi, wöch., 17:00 - 18:30, Bauhausstraße 11 - Seminarraum 015, Lecture, ab 07.11.2018

Mi, Einzel, 17:00 - 18:30, Bauhausstraße 11 - Seminarraum 015, exam, 13.02.2019 - 13.02.2019

engl. Beschreibung/ Kurzkomentar

Academic English Part Two

Part Two of the Academic English course concentrates on improving and refining aspects of academic style. It includes sections on clause and sentence structure, punctuation rules and how to incorporate quotations, statistics and footnotes into academic texts. Students will be encouraged to bring along examples of their own written work, which the class can then correct and improve together in a constructive, mutually supportive atmosphere.

Bemerkung

You are advised to take Part One first, although it is possible to take both parts concurrently (i.e. in the same semester) or in reverse order.

If you wish to take Part Two first, it is necessary to take a placement test.

Voraussetzungen

Registration for first time participants

First time participants are required to present the B2 English Level Certificate before the beginning of the course. Howard Atkinson therefore offers the following consultation hours:

24. October 2018, 10:00-12:00 a.m., room 001, Bauhausstraße 11

30. October 2018, 16:00-18:00 p.m., room 001, Bauhausstraße 11

Leistungsnachweis

written examination

Java Programming

N. Dittrich, S. Lucks

Veranst. SWS: 3

Blockveranstaltung

Block, 09:15 - 12:30, Bauhausstraße 11 - Seminarraum 015, 18.03.2019 - 29.03.2019

Block, 13:30 - 15:00, Bauhausstraße 11 - Seminarraum 015, 18.03.2019 - 29.03.2019

Beschreibung

Diese Blockveranstaltung bietet Studierenden die Möglichkeit Java von Grund auf zu erlernen. Im Zuge dessen werden generelle Grundlagen zum Thema Programmieren vermittelt, wie z.B.: - Variablen - Anweisungen - Schleifen - Methoden - Arrays und Listen - Strings - Objektorientierte Programmierung - ... Da diese Veranstaltung sehr viele praktische Aufgaben beinhalten wird, werden die Studierenden gebeten stets Laptops mitzubringen oder aber sich einen Partner mit Laptop zu suchen. Die Zielgruppe sind vor allem Master-Studierende, die noch wenig programmiererfahrung haben, die ihre Programmierkenntnisse wieder auffrischen wollen, oder die interessiert daran sind Java zu erlernen. Nach beendigung der Blockveranstaltung müssen die Studierenden in Gruppen ein Miniprojekt bearbeiten. Als Prüfungsleistung gilt die Präsentation dieses Miniprojekts sowie eine kurze Dokumentation (~3-10 Seiten).

engl. Beschreibung/ Kurzkomentar

This block seminar gives students the possibility to learn Java from the very beginning. In this context general concepts of programming will be taught such as: - variables - conditions - loops - methods - arrays and lists - strings - object-oriented programming - ... Because many practical tasks have to be solved, students are asked to bring their Laptop. If they cannot bring one with them, they should search for a partner having one to work with. The target group consists mainly of master's students who have just basic programming skills, who need to refresh their skills, or who are just interested in learning Java. After completing the block seminar, students have to solve one mini project. The final grade will be based on the presentation of this mini project in combination with a short documentation (~3-10 pages).

Leistungsnachweis

Miniprojekt

Project

2909022 Mobility as a Service

M. Fedior, R. Harder, M. Plank-Wiedenbeck

Veranst. SWS: 12

Projekt

Mo, wöch., 09:15 - 10:45, Marienstraße 7 B - Student Design Studio – SDS 303, ab 15.10.2018

Beschreibung

Es werden aktuelle Fragestellungen aus dem Mobilitätsmanagement mit speziellem Fokus auf der Anwendung neuartiger Mobilitätsformen und -dienstleistungen behandelt. Für Beispielfälle, die aus der Realität abgeleitet sind, werden innovative und umweltfreundliche Lösungen erarbeitet. Das Projekt wird in Gruppenarbeit mit Studierenden aus unterschiedlichen Fachbereichen bearbeitet.

Weitere Informationen:

<https://www.uni-weimar.de/en/civil-engineering/chairs/transport-system-planning/teaching/modules/master/project-mobility-as-a-service/>

engl. Beschreibung/ Kurzkomentar

Relevant topics in the field of mobility management with special focus on the application of novel mobility forms and services. For instance, problems derived from external effects of traffic and innovative as well as environmentally friendly solutions will be worked out. Group work in international and interdisciplinary teams.

Bemerkung

Angebot im Bauhaus-Semester

Anfang des Semesters wird eine Informationsveranstaltung zum Projekt angeboten/ Further information about the project will be provided during our information meeting in the beginning of the fall term:

- 10.10.2018, 13:30 Uhr/ 1.30 pm
- Raum 305 (DG)/ Room 305 (attic floor), Marienstr. 13C

Voraussetzungen

Teilnehmeranzahl auf 25 begrenzt/ class size limited to 25 participants: Bestätigung der Professur Verkehrssystemplanung/ approval by chair of transportation system planning B.Sc., International students: individual assessment

Leistungsnachweis

2 Zwischenpräsentationen / 2 interim presentations

1 Projektbericht mit finaler Präsentation und Poster/ project report as written paper with final presentation and poster

418210003 Argument Search Engine - Arguments up to the Minute

B. Stein, Y. Ajjour, R. El Baff, J. Kiesel
Projekt

Veranst. SWS: 10

Beschreibung

siehe englische Beschreibung

engl. Beschreibung/ Kurzkomentar

Argument Search Engine - Arguments up to the Minute

Goal: Recent events get interpreted and reported from different views in news portals. Some news portals are biased and tend to advertise a specific one. Argument search engines is a new generation of search engines that retrieve pro and con arguments for a query such as Is abortion moral?. Currently, our search engine indexes arguments from debate portals which might address old topics that are no longer of interest. Our goal is to crawl news articles and to mine arguments from them to make recent arguments available for the users. Mainly, we will be building crawling and mining algorithms to extract recent arguments and integrate them into our framework.

Bemerkung

Ort und Zeit werden zur Projektbörse bekannt gegeben.

Time and place will be announced at the project fair.

Leistungsnachweis

Abschlusspräsentation und Ausarbeitung

418210009 Hot Topics in Computer Vision WS18/19: Anomaly detection

V. Rodehorst, M. Kaisheva
Projekt

Veranst. SWS: 10

Beschreibung

Die Teilnehmer werden an ein aktuelles forschungs- oder industrierelevantes Thema herangeführt. Es ist nicht beabsichtigt einen festgelegten Bereich in voller Breite zu explorieren. Stattdessen werden die Teilnehmer mit der vollen Komplexität eines begrenzten Themas konfrontiert und die Eigeninitiative gefördert. Es ermöglicht einen Einblick in die Forschungs- und Entwicklungsprojekte des Fachgebiets.

engl. Beschreibung/ Kurzkomentar

Hot Topics in Computer Vision WS18/19

The participants are introduced to a current research or industry-related topic. It is not intended to explore a specific area completely. Instead, the participants are confronted with the full complexity of a limited topic and to challenge their own initiative. It allows an insight into research and development of the field.

Bemerkung

Ort und Zeit werden zur Projektbörse bekannt gegeben.

Time and place will be announced at the project fair.

Voraussetzungen

Gute Programmierkenntnisse (z.B. C/C++, MATLAB, OpenCL)

Leistungsnachweis

Aktive Mitarbeit, Einführungsvortrag, Abschlusspräsentation, Dokumentation

418210010 Hot Topics in Computer Vision WS18/19: Anomaly localisation

V. Rodehorst, M. Kaisheva
Projekt

Veranst. SWS: 10

Beschreibung

Die Teilnehmer werden an ein aktuelles forschungs- oder industrierelevantes Thema herangeführt. Es ist nicht beabsichtigt einen festgelegten Bereich in voller Breite zu explorieren. Stattdessen werden die Teilnehmer mit der vollen Komplexität eines begrenzten Themas konfrontiert und die Eigeninitiative gefördert. Es ermöglicht einen Einblick in die Forschungs- und Entwicklungsprojekte des Fachgebiets.

engl. Beschreibung/ Kurzkomentar

Hot Topics in Computer Vision WS18/19

The participants are introduced to a current research or industry-related topic. It is not intended to explore a specific area completely. Instead, the participants are confronted with the full complexity of a limited topic and to challenge their own initiative. It allows an insight into research and development of the field.

Bemerkung

Ort und Zeit werden zur Projektbörse bekannt gegeben.

Time and place will be announced at the project fair.

Voraussetzungen

Gute Programmierkenntnisse (z.B. C/C++, MATLAB, OpenCL)

Leistungsnachweis

Aktive Mitarbeit, Einführungsvortrag, Abschlusspräsentation, Dokumentation

418210015 Monitoring the World through Social Media

B. Stein, T. Gollub, M. Wiegmann
Projekt

Veranst. SWS: 10

engl. Beschreibung/ Kurzkomentar

Monitoring the World through Social Media

The grand vision of the project is a system that constantly monitors social media channels and immediately notifies users as signs of major global events and developments, such as disasters, crimes, or social unrests, occur. As a step towards realizing this grand vision, the project goals are (1) to design a system of facets for the classification of major global events and developments, (2) to extract common entities and events for arbitrary regions or locations from text, (3) to algorithmically assess the reliability and utility of social media accounts for specific (geo-) locations, and (4) to estimate the character traits of such social media accounts.

Bemerkung

Ort und Zeit werden zur Projektbörse bekannt gegeben.

Time and place will be announced at the project fair.

Leistungsnachweis

Abschlusspräsentation und Ausarbeitung

418210032 Digital ITD Twin

C. Koch, M. Artus
Projekt

Veranst. SWS: 8

Beschreibung

Die Studierenden werden im Projekt das Grobkonzept des digitalen ITD-Zwillings verfeinern und implementieren. Dafür müssen sie sich in die bestehende Soft- und Hardware einarbeiten. Dazu zählen Smart-Home-Systeme, FHEM, PostgreSQL, VR, AR, Unity, Industry Foundation Classes (IFC) und Autodesk Revit. Die Studierenden nutzen Methoden des Building Information Modelling (BIM) zur Erstellung eines digitalen Bauwerkmodells mit Materialien, Möbeln und Sensoren.

Unter Berücksichtigung der vorhandenen Soft- und Hardware müssen die VR- und AR-Applikationen konzipiert und implementiert werden. Die Studenten lernen dabei den Workflow der Softwareentwicklung und Werkzeuge für diesen Prozess kennen.

Ausgewählte Problemfelder:

- Virtuelle Begehung der ITD-Räume mit Interaktionen an virtuellen Sensoren und Aktoren
- Kopplung von virtuellen und realen Sensoren und Aktoren
- Anzeige von Messwerten und Interaktion mit Aktoren per AR-Applikation
- Interaktive Website zur Interaktion und Visualisierung der Aktoren und Sensoren

Möglicher Ablauf:

- Problemfeld wird festgelegt
- Einarbeitung in das Problemfeld mittels Literaturstudie
- Erarbeitung eines Konzeptes zum Lösen der Probleme
- Implementierung des Konzeptes
- Evaluierung des Konzeptes
- Schriftliche Ausarbeitung des Projektes

Vermittelte Kompetenzen:

- Softskills (Präsentieren, Diskutieren, Teamwork, Schreiben eines wissenschaftlichen Artikels)
- Vertieftes Wissen im Bereich des Software Engineerings
- Vertieftes Wissens und Anwendung im Bereich des Building Information Modeling
- Vertieftes Wissen im Bereich Datenvisualisierung und Usability

engl. Beschreibung/ Kurzkomentar

Digital ITD Twin

In this project, students will refine the concept draft of the digital ITD twin and implement it. For this, the students need to get used to the existing hard- and software, namely smart-home systems, FHEM, PostgreSQL, VR, AR, Unity, Industry Foundation Classes (IFC) and Autodesk Revit. Using methods of building information modeling (BIM) student will generate digital building models with materials, furniture and sensors.

In consideration of the existing soft- and hardware, VR and AR application have to be designed and implemented. This process teaches the software-development workflow and common tools in software engineering.

Selected topics:

- Virtual walk through the Chair of Intelligent Technical Design with interaction on sensors and actuators
- Connecting virtual and real sensors and actuators
- Visualizing measurements in an AR application
- Interactive website for controlling actuators and visualizing measurement data

Process:

- Topic selection
- Getting familiar with the topic via a literature study
- Design of a concept for problem solving
- Implementation of the concept
- Evaluation of the concept and implementation
- Written summary of the project

Acquired competences:

- Soft skills (presenting, discussing, team work, scientific writing)
- Deep knowledge in software engineering
- Deep knowledge and application of building information modeling
- Deep knowledge in data visualization and usability

mso-s

Bemerkung

Ort und Zeit werden zur Projektbörse bekannt gegeben.

Time and place will be announced at the project fair.

Leistungsnachweis

Presentation of project phases, literature analysis, implemented software, written summary of the project