International Summer Program (ISP)

Track A: Engineering

Track B: German and European Studies
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German Language Course

(Compulsory Class for Track A and B)

Lecturers

Sandra Danneil
Türel Tan

Time

Mondays, 10:00-13:00
Wednesdays, 16:00-19:00

Location

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<th>Group</th>
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<td>Group 2 (Tan)</td>
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Attention: On Monday, June 3rd, group 2 will meet in BCI-G2 620

Course Description

For beginners of German we will offer the German A1.1 course. This class focuses on the introduction to the German language, simple oral and written communication, and basic German grammar. The following competences are imparted: Students who pass the course successfully will be able to provide information about themselves and their country of origin; to greet and to say goodbye; to talk about their family; to express their condition, preferences and resentments; to talk about their hobbies and leisure time; to make and understand time designations; to name prices and quantities; to name things of
German Language Course

everyday life (groceries, furniture); to phrase simple questions; to talk about simple activities and events in the past tense.

For intermediate students of German we will offer more advanced courses on the levels required.

The textbook "Schritte plus: Deutsch als Fremdsprache" (1 through 6 according to the course level) will be used in class.

Credits

The German language course meets twice a week throughout the 7 weeks of the lecture period. This corresponds to 4.5 ECTS credit points or 3 credit hours.

Exam

There will be a final written exam.
Germany – Politics, Culture and Society

(Compulsory Class for Track A, Elective Class for Track B)

Lecturer

Iris-Aya Laemmerhirt

Time

Saturday, 25.05.2019, 9.00 - 18.00
Saturday, 01.06.2019, 9.00 - 18.00

Location

EF50 – Room 0.420 (Building 8)

Aim of lecture

The German culture course “Germany–Politics, Culture, and Society” is designed to introduce students to Germany’s cultural landscapes and political life. You will gain insights into your host country’s past and present and will be encouraged to contribute your own first-hand experiences to class discussions.

Description

The compact seminar covers the following topics:

- General introduction to Germany
- Topic specific workshops on German politics (including short student presentations)
- German history before and after World War II, including reunification (the material includes nonfiction, historical texts, and visual material)
- German literature (short overview and some examples)
Germany – Politics, Culture and Society

- German culture (including German food culture, sports, music)
- Migration in Germany: introduction to the topic; discussion of migration including a contemporary German film on the topic
- The Ruhr Area (focus on this specific region, its history and culture)

This course is a mandatory seminar for students who take classes exclusively from Track-A Engineering. If you attend classes from Track B-German and European Studies, you may choose whether to take part in this course. You will meet on two separate days at the beginning and at the end of the program for one day of compact seminar each.

Requirements
Interest in Germany

Credits
The compact seminar will be taught on two separate days, corresponding to 1.5 ECTS credit points or 1 credit hour.
Part I:
Track A - Engineering
### Track A - Engineering

#### Possible course selection for engineering, science and business majors

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Please note, that this is only a suggestion. Which courses are suitable for you, depends on your individual major.
Chapter 1: Economics and Business Administration
1.1. Concepts and Cases in International Marketing

Lecturers

Prof. Dr. Hartmut H. Holzmüller
M.Sc. Sabrina Heix

Time & Location

Thursdays, 16:00 – 19:00
Fridays, 12:00 – 15:00
Starting on June 6th 2019

Location

Chemistry HS2 (Building 12)

Aim of lecture/ Lecture content

This course provides an introduction into issues and problems commonly encountered in strategy formation and decision making by companies operating on an international scale. Students of the course shall

(1) become more sensitive to international marketing issues and develop an understanding of current problems that international marketers face on global markets,
(2) develop a knowledge of concepts and methods used in international marketing theory and business practice,
(3) be capable of applying the presented framework, concepts, and methods, to typical issues in international marketing management.
Chapter 1: Economics and Business Administration

Cases will help you to develop strategic thinking in an international marketing context and will provide you with an opportunity to sharpen your verbal and written communication skills. Utilizing a teaching approach that mixes cases, class discussions, group workshops, you will learn key concepts and tools used in solving international marketing problems.

Requirements
Basic knowledge in marketing.

Credits
The course will be taught 8 hours/week over a partial semester. This corresponds to 4 hours/semester-week or 7.5 ECTS credits.

Exam
Choice between

a) written and graded exam covering the entire class (both Concepts and Cases, 90 minutes),
b) Case Studies (1/3)+ written and graded exam on Concepts (60 minutes, 2/3) (mode will be announced in time)
Recommended Reading

- A reading pack with cases and background notes will be available at the Department of Marketing.

Website

http://www.wiwi.tu-dortmund.de/wiwi/m/de/lehre/veranstalt/sose_19/Concepts_and_Cases/index.html
Chapter 1:

Economics and Business Administration

1.2. International Business (Bachelor)

Lecturers

Prof. Dr. Steffen Strese

Time

Tuesdays, 4:00 pm - 7:00 pm
Wednesdays, 10:00 am - 1:00 pm
Starting on June 4th, 2019
Attendance in the first session is mandatory as you have to choose one examination alternative!

Location

Tuesdays, Mathematics M811 (Building 14)
Wednesdays, Mathematics M811 (Building 14)

Aim of lecture/ Lecture content

The module provides a comprehensive understanding of business strategies under consideration of external and internal influences as well as international aspects. Based on this, the module discusses growth strategies and cultural influences for international companies and underlines the distinct role of innovations in this context.

Requirements

None
Credits
The course will be taught 8 hours/week over a partial semester. This corresponds to 4 hours/semester-week or 7.5 ECTS credits.

Exam
Students can choose between two types of examination:

1. 100 % of total course points in exam (90 minute-exam)
2. 60% of total course points in exam (60 minute-exam), 40% of total course points in student presentation

Website:
http://www.wiwi.tu-dortmund.de/wiwi/tm/de/lehre/veranstaltungen/Sommersemester/IB/index.html
Chapter 2: Biochemical and Chemical Engineering
2.1. Dynamic Simulation

Lecturers:

Prof. Dr.-Ing. Sebastian Engell
M. Sc. Reinaldo Hernandez

Time

Mondays, 15:00 – 18:00
Starting May 27th 2019

Location

BCI – PC-Pool 1 (Building 6)

Aim of the lecture

The goal of the course is that the student obtains an understanding how dynamic process simulators work and is able to formulate, solve and analyze problems in advanced dynamic process simulators.

Lecture Content

The course dynamic simulation teaches the theoretical and practical use of advanced dynamic process simulators. The software used is gPROMS, a commercial equation-oriented modelling and optimization framework, which is widely used in the chemical industry. In order to teach the students the handling and implementation in gPROMS, the following topics are dealt with:

- Basics of numerical mathematic:
  - Types of dynamics systems
  - Numerical stability
Chapter 2:
Biochemical and Chemical Engineering

- Numerical solution of ODEs
  - Basics of gPROMS
    - Implementation of basic models
    - Solving basic models in gPROMS
  - Object oriented programming in gPROMS
    - Theory of object oriented programming
    - Realization in gPROMS
  - Logical conditions and scheduling in gPROMS
- Numerical solutions of partial differential equations
  - Discretization methods
  - Initial and boundary conditions
- Implementation of partial differential equations in gPROMS
- Dynamic optimization
  - Basics of optimization theory
  - Solving of dynamic optimization problems
  - Dynamic optimization of chemical processes in gPROMS

Requirements
The students should be able to derive models of chemical processes and to understand given process models.

Credits
The course will be taught 3 hours/week over a partial semester. This corresponds to 1.5 hours/semester-week or 1.5 ECTS credits.
Chapter 2: Biochemical and Chemical Engineering

Exam
Written (computer-based) exam.

Website
Chapter 2:
Biochemical and Chemical Engineering

2.2. Logistics of Chemical Production Processes

Lecturers

Dr.-Ing. Christian Sonntag

Time

Thursdays, 14:15 – 15:45
Fridays, 08:00 – 09:30
Starting on May 30th, 2019

Location

Thursdays: BCI – ZE 07 (Building 6)
Fridays (Tutorial): ZE 07 or PC-Pool I (Building 6)

Aim of the lecture

The students obtain an overview of supply chain management and planning and scheduling problems in the chemical industry and of techniques and tools for modelling, simulation and optimization. These include discrete event simulation, equation-based modelling, mixed-integer linear programming, heuristic optimization methods and modelling and optimization using timed automata.

The students will be enabled to identify logistic problems, to select suitable tools and techniques for simulation and optimization and to apply them to real-world problems.
Chapter 2: 
Biochemical and Chemical Engineering

Lecture Content

1. Introduction to Batch Processes and Supply Chain Management
2. Discrete event simulation: problem abstraction, classification, queuing policies, random number generation, probability distributions
3. Scheduling: Gantt Charts, Terminology and generic problem representation, machine environments, state task networks (STN), resource task networks (RTN), classification of batch scheduling problems, uniform discrete and non-uniform continuous time representation, campaign and moving horizon scheduling
4. Linear programming: Properties of linear programs, graphical method, simplex method
5. Mixed Integer Linear Programming
   Integer and binary variables, branch and bound algorithm, concept of relaxation, concept of convex hull, search algorithms
6. Modeling: Modeling with binary variables, contingent decisions, Big “M” constraints, case-study: production of EPS (expandable polystyrene)
7. Heuristic optimization: Exact and heuristic optimization, heuristic algorithms, meta heuristic algorithms, classification of search techniques
8. Scheduling with timed automata: Comparison of MI(N)LP and TA, TA modeling, semantics, reachability analysis, reduction techniques, reactive scheduling
Chapter 2:

Biochemical and Chemical Engineering

Tutorial and laboratory contents

1. Paper-based supply chain management game
   Bullwhip effect, decisions with limited information
2. Discrete event simulation with INOSIM Professional
   (computer-based): Recipe driven simulation of a paint factory
3. Production scheduling with Schedule Pro and Lekin
   (computer-based): Dispatching rules, impact of sequence-dependent changeovers, campaign scheduling
4. Mixed Integer Linear Programming (paper-based): modeling and solution of MILPs, graphical solution, branch and bound algorithm
5. Modeling and Optimization with AIMMS (computer-based): Building of graphical user interface, economic optimization of EPS production
6. Timed Automata Scheduling with TAOpt (computer-based)

Requirements

Higher mathematic course

Credits

The course will be taught 4 hours/week over a partial semester. This corresponds to 2 hours/semester-week or 3 ECTS credits.

Exam

Written final exam.
Chapter 2:

Biochemical and Chemical Engineering

Recommended Reading


Website

Chapter 2:

Biochemical and Chemical Engineering

2.3. Bubbles and drops in chemical and biochemical processes

Lecturer

Prof. Dr.-Ing. Norbert Kockmann

Time

Wednesdays, 10:00 – 14:00
Starting on May 29th, 2019

Location

BCI – ZE 07 (Building 6)

Aim of lecture

Methods of generation, application and basics of discrete multiphase systems

Lecture Content


Requirements

Basic knowledge in Fluid Mechanics
Chapter 2:
Biochemical and Chemical Engineering

Tutorials
Calculation of typical applications in process engineering

Laboratory
Demonstration of capillary flow and two phase columns.

Credits
The course will be taught 4 hours/week over a partial semester. This corresponds to 2 hours/semester-week or 3 ECTS credits.

Exam
Written final exam.

Recommended Reading
All slides presented will be given to attendants of the course together with recommendations of the literature
Chapter 2:
Biochemical and Chemical Engineering

2.4. Introduction to Programming with MATLAB

Lecturer
Prof. Dr.-Ing. Sebastian Engell
Dipl.-Ing. Dipl.-Wirt.-Ing. Clemens Lindscheid

Time
Tuesdays, 14:00 – 17:00
Starting on May 28th, 2019

Location
BCI – PC-Pool 1 (Building 6)

Aim of lecture
This lecture is thought as an introduction to programming in MATLAB. It should introduce into basic concepts of programming and give an overview over the most important elements of MATLAB. The aim of the course is to enable the participates to use the MATLAB programming language to write small applications for processing data and give a slight introduction into using MATLAB to solve small optimization problems.

Lecture Content
The contents of the lectures are:
1. Introduction to basic concepts of programming
2. Using MATLAB as a calculator
3. Basic data-structures
4. Conditional execution and loops
5. Advanced data-structures
6. Reading data and graphical output
7. Using numerical methods with MATLAB

Requirements
None

Tutorials
In the tutorials the students will get the opportunity to use MATLAB to solve tasks by themselves, which is an important part to learn programming. Therefore the participation in the tutorials is mandatory.

Credits
The course will be taught 3 hours/week over a partial semester. This corresponds to 1.5 hours/semester-week or 1.5 ECTS credits.

Exam
Written exam (60 minutes).

Website
2.5. The painless way to LabVIEW

Lecturer

Prof. Dr. David W. Agar
M.Sc. David Hellmann
M.Sc. Maximilian Wiesehahn

Time

Wednesdays, 14:00 – 16:00
Starting on May 29th, 2019

Location

BCI – PC-Pool 1 (Building 6)

Lecture Content

In the lecture an introduction to the commercial software LabVIEW is given. Special emphasis is put on control and safety of experimental setups as well as on automation of safety and sampling procedures. The lectures include several practical examples that help to acquire a basic knowledge on LabVIEW.

Aim of lecture

The students attain knowledge about the general use of LabVIEW and the application of this software to the control, safety and automation of chemical plants and experimental setups. Such knowledge is particularly relevant for a chemical engineer and may prove useful for a Chemical Engineering Student during the performance of an experimental Bachelor/Master Thesis.
Chapter 2:
Biochemical and Chemical Engineering

Requirements
Basic knowledge in programming

Specials
The number of participants is limited to 4 ISP students.

Credits
The course will be taught 4 hours/week over a partial semester. This corresponds to 2 hours/semester-week or 2.5 ECTS credits.

Examination
There will be 3 graded assignments.
Chapter 3: Automation and Robotics
3.1. Process Optimization

Lecturer

Prof. Dr.-Ing. Sebastian Engell
M.Sc. Lukas Maxeiner
M.Sc. Egidio Leo

Time

Mondays, 08:00 – 10:00
Tuesdays, 10:00 – 12:00
Starting on May 27th, 2019

Location

Mondays, BCI – ZE02 (Lecture)
Tuesdays, PC-Pool I (Tutorial)

Aim of lecture

At the end of the lecture the students are capable to solve different (industrially relevant) types of optimization problems.

Requirements

Basic Mathematics (linear algebra, functional analysis), basic knowledge of differential equations, and basic knowledge of MATLAB.

Lecture Content

- Introduction to mathematical optimization, types of optimization problems, basics of convex analysis
- Scalar optimization problems: Definition and properties, optimality conditions, solution methods (interval
Chapter 3:
Automation and Robotics

- bracketing, golden-section method, steepest-descent method, secant method, Newton method), convergence, applications
- Multidimensional optimization problems: Definition and properties, optimality conditions, solution methods (simplex method, Nelder-Mead method, steepest-descent method, quasi-Newton methods, Newton method, conjugate gradient method), line search, convergence, applications
- Metaheuristics search: Definition and properties, solution methods (simulated annealing, tabu search, evolutionary algorithms, applications
- Constrained optimization problems: Definition and properties, convexity, optimality conditions, KKT conditions, duality principle, solution methods (Newton method, generalized reduced gradient method, active set method, interior-point methods, sequential quadratic programming), sensitivity analysis, applications
- Linear programming: Definition and properties, applications, optimality conditions, duality principle, solution methods (Dantzig’s simplex algorithm, interior-point methods)
- Quadratic programming: Applications, optimality conditions, solution methods, Introduction to Linear Model Predictive Control
- Dynamic optimization problems: Definition and properties, solution methods (sequential, simultaneous and multiple shooting techniques), applications, extensions to Nonlinear Model Predictive Control
Tutorials

Applications of the methods presented in the lectures are realized on exemplary case studies related to processing industries and other engineering domains in the computer-based tutorial sessions using MATLAB.

Credits

The course will be taught 4 hours/week over a partial semester. This corresponds to 2 hours/semester-week or 4 ECTS credits.

Exam

Written, closed book.

Recommended Reading

Slides presented at the lecture will be handed out to attendants of the course. The course covers selected topics from the following standard textbooks:

Chapter 3:

Automation and Robotics

Website

3.2. Data-based Dynamic Modeling

Lecturers

Prof. Dr.-Ing. Sebastian Engell
M.Sc. Corina Nentwich

Time

Wednesdays, 08:30 – 10:00
Thursdays, 15:45 – 17:15
Starting on May 29th, 2019

Location

Wednesdays: BCI – ZE 07 (Building 6)
Thursdays: BCI – PC-Pool 1 (Building 6)

Aim of lecture

- Concepts of models, which can be identified from data
- Judging the quality and the limitations of data-based models
- Theory and basic calculations of the z-transformation

The students can identify the dominant dynamics of a process from step responses and can apply modern methods and algorithms to identify the parameters of linear process models from measured data. The students know the concept of the z-transformation. They know the structure of nonlinear black box models and can judge the quality and the limitations of data-based models.
Chapter 3:  
Automation and Robotics

Requirements
The students should know basic concept of the Laplace-transformation and transfer functions.

Lecture Content
This lecture deals with different linear and non-linear black-box models.

The identification of the parameters of these models is the first topic, beginning with the identification of simple models from step responses. The goal is here is to find a model of a system by looking at its step response. Stable or unstable systems, systems with over- and/or undershoot or oscillating systems can be modeled by simple transfer functions in the Laplace-domain. Methods like Kupfmüller or Schwarze can be applied to given step responses. The identifiability of poles and zeros of transfer functions also depends on their position in the complex plane.

The next types of models, which are covered in this lecture, are linear transfer functions in the (sampled) z-domain. An introduction to sampling and problems which arise from sampling are discussed (e.g. Shannon theorem). The z-transformation is introduced and calculation rules e.g. for inverse transformations are discussed and applied. The relation between transfer functions in the s- and z-domains (position of the poles, transformation) is discussed.

An important class of black-box models is described as prediction error methods. The theory behind ARX, ARMAX and OE models is explained in detail. Different methods for the numerical parameter estimation (linear and nonlinear numerical
least squares estimation) are discussed. The capability of representing a systems behavior by such models is highly dependent on the model order. Accuracy and overfitting are discussed.

The last part is about modeling using nonlinear black box models (perceptron neural nets, radial-basis-function nets). Concepts of training and the usage of neural networks as dynamic models are introduced. The quality of neural net models is discussed.

**Tutorials**

The lectures are supported by tutorials, in which the concepts are applied. Some of the tutorials are computer-based and are carried out in a computer lab. The tutorial contents are listed below:

- Step response identification (Methods of Kupfmüller, Strejc and Schwarze)
- Computer lab: Step response identification: Validation of graphical methods / Optimization-based step response identification (with MATLAB)
- Discrete-time systems / z-Transform
- Computer lab: ARX parameter estimation (with MATLAB)
- Computer lab: Prediction error methods (with MATLAB)
- Non-linear black box modelling

**Credits**

The course will be taught 4 hours/week over a partial semester. This corresponds to 2 hours/semester-week or 2.5 ECTS credits.
Chapter 3:
Automation and Robotics

Exam
The students are graded with an assignment (15%) and one written exam (85%). The assignment is an application example, which has to be solved using a computer. The solution has to be described and submitted.

Website
3.3. Cyber-Physical System Fundamentals

Lecturers

Prof. Dr. Jian-Jia Chen
Dr. Ing. Anas Toma

Time

Wednesdays, 12:15 – 13:45
Fridays, 12:15 – 13:45
Starting on May 8th 2019

Location

OH12 - Room E.003 (Building 17c)

Aim of lecture

The aim of this course is to provide an overview over fundamental techniques of designing embedded systems (information processing systems embedded into products such as telecommunication systems, vehicles or robots). At the end of the course, the student will be able to put the different areas of embedded systems into perspective and to understand more specialized topics, such as timing predictability, modeling, scheduling, or performance evaluation.

Lecture Content

The compact seminar covers the following topics:

Introduction of Cyber-Physical Systems

- Motivation, Application Areas, and Challenges in Design
- Specifications and Modeling
Chapter 3:
Automation and Robotics

- Models of Computation (i.e., State Charts, SDK, Dataflow, Petri nets, Discrete Event Modeling),
- CPS-Hardware: Discretization, Memory Systems, Sampling Theory, and Signal Converter
- System Software: Real-Time Operating Systems, Resource access protocols, and Middleware
- Evaluation and Validation: Multi-objective optimization, Real-Time Calculus, Dependability Analysis
- Application Mapping: Scheduling, Dependency, and Design Space Exploration

The course is organized as an inverted classroom. Students are asked to watch the lecture at home and do the theoretical exercises together with the lecturer in the classroom and the practical exercises in lab sessions. There will be lab assignments to let students get familiar with the modeling tools, embedded hardware platforms.

The course on cyber-physical systems fundamentals can be seen on youtube as well:

http://www.youtube.com/user/cyphysystems

Requirements

Basic education in computer science or computer engineering; we assume that students are familiar with at least one programming language (preferably C/C++ or Java) and do understand computer structures (at the level of Hennessy/Patterson: Computer Structures), finite state machines, NP completeness, simple electronic circuits and systems of linear equations. Typically, we expect students to be third year undergraduates or graduate students. EE or ME
students should study the above subjects before attending the course.

Tutorials
1.5 hrs per week. The content of laboratory can be itemized as follows:

- StateChart Tutorial on IAR development board (3 weeks)
- VHDL-simulations : Syntax and Semantics (2 weeks)
- Robotic Application on LEGO Mindstorms (3 weeks)

Credits
The lecture/tutorial will be taught 4 hours/ semester-week over a partial semester (+1.5 hours Laboratory) which corresponds to 6 ECTS credits

Exam
To participate in the exam, the students have to pass at least 50% of total points in each lab session. In 2019, there will be an oral exam for ISP students.

Recommended Reading

Website
Chapter 4: Applied Mathematics
4.1. Intensive Course in Statistics

Lecturers
Prof. Dr. Markus Pauly

Time & Location
Lecture:
Wednesdays 12:00 – 14:00 Mathematics E27 (Building 14)
Thursdays 10:00 – 12:00 Mathematics E27 (Building 14)

Tutorials:
Wednesdays 10:00 – 12:00 CDI / R121 (Building 16)

Starting on May 29\textsuperscript{th}, 2019 at 10:00 in CDI / R121.

Aim of lecture
The course gives an introduction to statistical concepts that are useful for research projects in various fields of application and areas of science.

Lecture Content
Chapter 4:

Applied Mathematics

Table of contents:

1. Introduction (random experiments, random variables, sample space)
2. Empirical distributions and exploratory data analysis (frequency tables, bar charts, histograms, distribution characteristics)
3. Probability theory (probability, conditional probability, independence, total probability, Bayes rule)
4. Random variables and their distribution (discrete distributions (Uniform, Bernoulli, Binomial, Hypergeometric, Poisson), continuous distributions (Uniform, Normal), expectation and variance, sampling distribution theory, joint distributions, covariance and correlation)
5. Estimation and confidence intervals (properties of estimators, Maximum Likelihood estimator, confidence intervals)
6. Hypothesis testing (Test of statistical hypotheses (Binomial test, Gaussian test, t-test, approximate tests), power, p-value)
7. Regression (simple / multiple regression, tests concerning regression)
8. Time series analysis (descriptive time series analysis (moving average, differencing), stationarity)

Requirements

Except for basic mathematical calculus no prior knowledge is necessary.
Tutorials and Laboratory

The tutorial will be used to practice the course material by solving statistical problems and to further discuss student questions. The statistical computer package R will be introduced for statistical programming and used by the students to analyze small data sets. This includes theoretical tutorials and software labs.

Exam

Written exam.

Credits

The lecture/ tutorial will be taught 3 hours/semester-week which corresponds to 5 ECTS credits.

Recommended Reading

Basics of Probability and Statistics:


Basics of R:

Chapter 4:

Applied Mathematics


Website

https://www.statistik.tu-dortmund.de/2677.html
Chapter 5: Computer Science
5.1. Architecture & Implementation of DBMS

Lecturer

Prof. Dr. Jens Teubner

Time

Lecture:
- Mondays 08:00 – 10:00 OH12, Room E.003 (Building 17c)
- Wednesdays 10:00 – 12:00 OH12, Room E.003 (Building 17c)

Tutorials:
- Thursdays 14:00 – 16:00 OH14, Room 304 (Building 17c)

Starting on May 27th, 2019

Course Description

Database systems form the heart of virtually any enterprise application. They manage vast amounts of data, yet allow for fast and efficient search; they handle thousands of updates every second, yet won't trip over problems due to concurrency; and guarantee consistency and data integrity even in the case of catastrophic events (loss of hardware, etc.).

In this course we learn how database systems can provide this service and performance. We will look “under the hoods” and understand how a database is built internally. We will get to see techniques that allow to construct a system in a scalable and robust manner.
Chapter 5:

Computer Science

More specifically, our agenda includes: space management (buffer manager), index structures (single- and multi-dimensional), query processing (e.g., external sorting, join processing), query optimization, concurrency control (e.g., two-phase locking), failure tolerance (ARIES), distributed database systems.

Credits

The course will be taught 6 hours/week over a partial semester. This corresponds to 3 hours/semester-week or 4 ECTS credits.

Exam

Written or oral exam.

Website

Part II:
Track B – German & European Studies
Chapter 6: Courses for German & European Studies
6.1. What is “German”? German History and Identity Formation

Lecturer
Jan Hildenhagen

Time
Tuesdays, 16:00 – 19:15

Location
EF50 – Room 0.420 (Building 8)

Course Description
Germany is a perfect example of how the political construction of nations and borders shape societies and influence them; for example through a culture of remembrance. Using journalistic and scientific articles, students from the U.S., Germany and other European countries will enter into a dialogue with the instructor and each other regarding the history of the “Germans”. Discussing various moments of German history, students will get a better understanding of the alleged “German identity”.

Credits
The course will be taught 2 hours/semester-week which corresponds to 3 ECTS credits.
6.2. The Union at Risk: History and the Future of the European Union

Lecturer
Jan Hildenhagen

Time
Fridays, 12:00 – 15:15

Location
EF50 – Room 0.420 (Building 8)

Course Description
In the course of the so-called ‘economic and financial crisis’ that started in 2008, the European Union seems at risk, in particular after the so-called “Brexit” in 2016. Using journalistic and scientific articles, students from the U.S., Germany and other European countries will enter into a dialogue with the instructor and each other regarding the history and the future development of the EU. Discussing various opinions and potential alternate models the students will hopefully get a better understanding of the European Union in the context of “European identity”.

Credits
The course will be taught 2 hours/ semester-week which corresponds to 3 ECTS credits.
6.3. To the North Pole and Beyond: A Transatlantic Voyage to the Arctic in American and European Literature

Lecturer

Johanna Feier

Time

Mondays, 14:15-17:45

Location

EF50 – Room 0.420 (Building 8)

Course Description

The Arctic has, undoubtedly, held a strange, longstanding fascination on both sides of the Atlantic. In this seminar, we will explore the place/s the North Pole has occupied in the public imaginary. Starting in the 19th century and its infatuation with the Arctic, we will analyze tales by Mary Shelley, Edgar Allan Poe, and Arthur Conan Doyle, among others, before navigating to the 20th and 21st centuries. How have perceptions of the North Pole changed over time? How have engagements with the Far North shaped national discourses? Why has the allure of the Arctic persevered? These are merely some of the questions that will guide our literary voyage to the North Pole. This course takes a global perspective at our world. A reader will be made available.
Chapter 6:

Courses for German & European Studies

Credits

The course will be taught 2 hours/semester-week which corresponds to 3 ECTS credits.
6.4. Transatlantic Trump: The Novel Presidency between Europe and America

Lecturer

Prof. Dr. Walter Grünzweig

Time

Tuesdays, 8:30 – 11:45

Location

EF50 – Room 0.420 (Building 8)

Course Description

This course will look at the Trump Presidency from a Transatlantic perspective. Students from Europe and the United States will investigate Trump as a cultural and political phenomenon and attempt to grasp its international significance. Are Populism and Anti-Intellectualism international phenomena? Is there a European Trumpism? Is Stephen Bannon successful in transferring American political culture to Europe? The class will start on 28 May, immediately after the Elections to the European parliament which will allow us to put these questions in a very up-to-date political framework.

Credits

The course will be taught 2 hours/ semester-week which corresponds to 3 ECTS credits.
Chapter 6: Courses for German & European Studies

6.5. Creative Culture and Urban Transformation through a Transatlantic Perspective

Lecturer
Hanna Rodewald

Time
Wednesdays, 8:30 – 11:45

Location
EF50 – Room 0.420 (Building 8)

Course Description
Cities of the American Rust Belt and the German Ruhr Area share a similar history of economic rise through industrial development but also of its later decline. Today post-industrial cities, such as Detroit or Dortmund, face the challenge to redefine their urban landscapes. Richard Florida’s concept of the Creative Class as the saving solution for urban renewal and economic revitalization is a prominent example of an American urban redevelopment model that has been exported and implemented in cities around the world. During the European Capital of Culture in 2010 the Dortmund U and its surrounding neighborhood seemed to have been highly influenced by Florida’s approach.
Chapter 6: Courses for German & European Studies

By means of a transatlantic perspective, we will take a close look at the Unionviertel, its various agents and institutions and the different ways in which art, creativity and culture work towards urban transformation. That way we will work out similarities and possible reversals of Florida’s creativity script. Project based field trips to the neighborhood will give students concrete insights into the ways in which urban creative re-imagination is put to work.

Credits

The course will be taught 2 hours/ semester-week which corresponds to 3 ECTS credits.
Chapter 6: Courses for German & European Studies

6.6. Coffee & Cafés – A Beverage & Its Cultural Impact

Lecturer
Bernd Eßmann

Time
Thursdays, 10:15-13:45

Location
EF50 – Room 0.420 (Building 8)

Course Description
Coffee is a ubiquitous beverage that we usually take for granted without reflecting on the impact it has on our culture(s). We will take a closer look at it, specifically the places that it is frequently – & publicly – consumed in, the cafes. Be those traditional cafes (the coffeehouses in Vienna come to mind) or rather recent developments such as Starbucks. In this course we will try to find out their function in our culture(s), to find out whether cafes are, as Ray Oldenburg puts it, "hangouts at the heart of a community". For this we will take a look at the US and Germany, but especially also the perspective of the International Summer Program participants will provide valuable insights.
Chapter 6:
Courses for German & European Studies

Credits

The course will be taught 2 hours/semester-week which corresponds to 3 ECTS credits.
6.7. “The decade that just won’t die”: The Past and the Present of ´80s Cinema

Lecturer

Sandra Danneil

Time

Fridays, 8:30 – 11:45

Location

EF50 – Room 0.420 (Building 8)

Course Description

The phenomenal return of 80s aesthetics in more recent remakes, e.g. from Stephen King’s IT (2017) and the Netflix series Stranger Things (2016) demonstrates the undying popularity of the 1980s on big and small screens. Eighties genres have shaped audience’s nostalgic perception of an America in which time travel films and high school romances, teen sci-fi drama and action adventures met the expectations of a neon colored, postmodern popcorn cheerfulness. The enduring impact of the MTV generation is inspired by an era in which producers took over from screenwriters, and directors like Don Simpson, Stephen Spielberg, and Robert Zemeckis dominated the big screen with their hedonistic high-concept films with
Chapter 6: Courses for German & European Studies

plots characterized by a low intellectual demand because they were just fun!

But beyond all the surface, the seminar will focus on a number of hidden cultural phenomena and how they apply to a reading of 1980s genres from a contemporary perspective. From this point of view, *IT* is not a horror film with a teen cast, but a coming-of-age drama with horror elements in the midst of crisis-ridden America; Silvester Stallone’s *Rambo* is legendary for its new masculinity concept and compensatory power against national anxieties of war and political inferiority; and *Breakfast Club* has become cult for its sensitive study of the Gen Xers and their shared despair about a reckless future. Hence, behind all their lightfooted diversity and liberal spirit, 80s movies also employed a lot of racism and misogyny as in *Soul Man* and *Fatal Attraction* and they took on abortion (*Dirty Dancing*), social class (*Pretty in Pink*), and gang rape (*The Accused*). In class, we will watch and close-read a selection of representative films to uncover the hidden phenomena about the decade that just won’t die.

**Credits**

The course will be taught 2 hours/ semester-week which corresponds to 3 ECTS credits.
Part III: Appendix
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### Appendix – Timetable Track A

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<td>Coffee &amp; Cafes - A Beverage &amp;</td>
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<td>The Union at Risk: History and the Future of the European Union</td>
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Appendix – Campus Map
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**Campus Nord**
1a. Mathematik, Rehabilitationswissenschaften (Pav. 10; EF 73)
1b. Halle Fluidenergiemaschinen (EF 71b)
1c. Referat Arbeit-, Umwelt- und Gesundheitsschutz (EF 71a)
2. Leitwarte, Blockheizkraftwerk (EF 71c)
3. Dez. 8 – THB (EF 71)
4. Dez. 4: Studierendenservice, Referat Internationales, zhb (EF 61)
4a. Internationalen
   Begegnungszentrum (IBZ) (EF 59)
5. Maschinenbauhalle (LE 1)
6a. Wissenschafts, Personalauf, Wissenschafts, Personalauf, JAV, Dez. 6.1 (EF 72)
7. Studierendenservice, Mensa (VP 85)
8. Erziehungswissenschaften, Psychologie und Soziologie, Human­wissenschaften und Theologie, Rehabilitationswissenschaften, Kultur­wissenschaften, Kunst- und Sport­wissenschaften, ITMC, ASTA, DoKoLZ, zhb, dobes (EF 50)
9. Unicenter, Lehmredaktion, Journalistik (VP 74)
10. Physik – DELTA (MG 2)
11a. Maschinenbau I (LE 5)
11b. Maschinenbau II (LE 2)
12. Chemie und Chemische Biologie, Wirtschaftswissenschaften, Elektrotechnik und Informationstechnik, Maschinenbau, Zentrale Vervielfältigung (OH 6)
13. Hörsaal­gebäude II (OH 4)
14. Audimax, Mathematik, Statistik, Wirtschaftswissenschaften (VP 87)
15. Universität­bibliothek (VP 76)
16. Statistik, Zentrum für Hochschulbildung (zhb), Institut für Schulentwicklungsforschung (IF3) (CDI-Gebäude; VP 79)
17a. Informatik (OH 16)
17b. Informatik (OH 14)
17c. ITMC, Informatik (OH 12)
18. Elektrotechnik und Informationstechnik (FWW 4)
19. Elektrotechnik, Institut für Robotik (OH 4)
20. Wirtschaftswissenschaften (Pav. 11: OH 6a)
21a. Physik, Elektrotechnik und Informationstechnik, WWI (OH 4)
21b. Neubau Chemie–Physik (OH 4a)
22. Erich–Brost–Institut (OH 2)
23. Campus Treff (VP 120)
24. Kunst- und Sportwissenschaften, Fitness­förder­werk (OH 3)
25. Seminarraum­gebäude (FWW 6)
26. Kindergartengesellschaft (EF 57)
27. Logistik­Campus (JF 2–4)
28. A1–A3 Dez. 5 (MSW 12, 13, 18, WIWI (MSW 12)
29a. HGU Test­zentrum (im Bau)
29b. Versuchsfeld HVDC

**Campus Süd**
30. Raum­planung (G3 III: AS 10)
31. Architektur und Bau­ingenieur­wesen (G3 II: AS 8)
32. Raum­planung, Architektur und Bau­ingenieur­wesen (G3 I: AS 8)
33. Hörse­, Rektorat, Kan­zlei, Referat Deutsch­liche und eu­ropä­ische Bildungs­- und Hochschul­politik, Referat Datenschutz, Gremien und Beihen­, Referat Inter­ne Revision (HS I: AS 4)
33a. Modell­baus­werkstatt (AS 4a)
34. Dez. 2, Dez. 5, Referat Controlling (WD 2)
35. Dez. 3 (AS 1)
36a. Maschinenbau III (GS 303)
37. Experiment­er­halle (GS 299)
38. Architek­ten (AS 2)
39. Referat Hochschul­kommunikation, Referat Hochschul­marketing (BS 285)
40. Referat Forschungs­förder­ung (BS 283)
41. Rud­lett­Chaud­orre­Pavil­lon (BS 297)
42. Lager­halle (BS 239)
42b. Versuchs­halle (im Bau)
43. Dezorgan­t (Pav. 8: WD 1)
44. Pav. 2: WD 2a
45. Haus­Dü­rek­k­mann, ASTA (Pav. 1: BS 322)
46. Pav. 7: BS 322
47. Helmut­Keunecke­Haus / Gä­stehaus (BS 233)

**Legende**
AS: August­Schmidt­Straße
BS: Bar­oper­Straße
EF: Emil­Figge­Straße
FWW: Friedrich­Wöh­ner­Weg
JF: Joseph­von­Fraunhofer-Straße
LE: Leonard­-Euler­­Straße
MG: Maria­Geop­pert­-Mayer­Straße
MSW: Martin­Schmel­zer­Way
OH: Otto­Hahn­Straße
VP: Vogel­pohlweg
WD: Wilhelm­-Dit­lhey­-Straße
P: Park­plätze
H: Haltestelle H­-Bahn
H-B: Haltestelle Bus und Bahn
A1–A3: Ann­mittelungen

**Technische Universität Dortmund**
August­Schmidt­Straße 4,
44227 Dortmund,
Telefon: 0231/755-1