Degree programmes, seminars and lectures taught in English and other foreign languages

SoSe 2016

INTERNATIONAL COURSE CATALOGUE

International Office
Gebäude Studierenden-Service-Center (SSC)
Universitätsstraße 150
44801 Bochum

Email: rubiss@rub.de
www.international.rub.de/rubiss
INTERNATIONAL COURSE CATALOGUE

SoSe 2016

Degree programmes, seminars and lectures taught in English
Dear student, dear researcher, dear guest,

this is the International Course Catalogue (ICC) for Ruhr-Universität Bochum, put together by RUBiss – RUB international student services of the International Office. The International Course Catalogue gives an overview of RUB’s classes which are taught in foreign languages. It is aimed at international students wanting to organise their semester programme, prospective students planning on studying in Bochum, or partners and guests wishing to gain a general idea of RUB’s international courses and degree programmes.

All courses are open to exchange students and students of related subjects.

It contains the following information:

1. A compilation of seminars and lectures (Bachelor, Master and PhD) held in English or other foreign languages:
   Many of RUB’s departments offer seminars and lectures in English or other foreign languages. These are NOT usually part of an international degree programme.
   The ICC provides information about the content of the classes and prerequisites for admission, as well as credit points and contact persons. It also states which courses can be accredited to the “Optionalbereich”, and which ones are especially suitable for exchange students.

2. Additional information on studying and researching internationally at RUB:
   RUB’s international profile, a list of international (English) Master and PhD programmes as well as double and joint degree courses, exchange programmes, RUBiss – RUB international student services, Welcome Centre for internationally mobile researchers, application and admission, contact addresses.

We hope that you will find the International Course Catalogue a helpful guide for your semester programme, and wish you every success in the new semester!

Your RUBiss – RUB international student services team
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THE RUHR-UNIVERSITÄT BOCHUM

Located in the midst of the dynamic, hospitable metropolitan area of the Ruhr, in the heart of Europe, Ruhr-Universität Bochum (RUB) with its 20 faculties is home to 5,600 employees and over 43,000 students from 130 countries. All the great scientific disciplines are united on one compact campus. RUB offers approximately 150 bachelor’s and master’s degree programmes in various combinations.

Opened in 1965 as the first new university to be established in Germany following the Second World War and also the first university in the Ruhr area, RUB is now one of Germany’s biggest universities and on its way to becoming one of the leading European universities of the 21st Century.

The university’s greatest strength is its interdisciplinary cooperation. Interfaculty and interdisciplinary Research Departments, which are nationally and internationally networked, sharpen RUB’s profile.

What makes it all come alive, are the people who meet on campus with their thirst for knowledge, their curiosity and their commitment. They help shape the RUB and their open-mindedness makes RUB an attractive place for people from around the world: More than 5500 international students, approx. 830 international PhD students and international researchers are studying and working at RUB. About 500 international exchange students spend time at RUB each year and just as many RUB students complete parts of their degree abroad.

Research at RUB is internationally linked and geared towards internationalisation: RUB has signed collaboration agreements with numerous prestigious partner universities and these collaborations are put into practice by way of the active exchange programmes and various projects which are taking place for students and researchers. RUB is a member of the Utrecht Network and further international university networks in the areas of research and teaching. It has about 350 partner universities in the ERASMUS Programme. It is also running liaison offices in New York, Moscow and São Paulo/Rio de Janeiro with its neighbouring universities Dortmund and Duisburg-Essen as part of the University Alliance Ruhr (UA Ruhr).

International students, PhD students and international researchers can benefit from a number of extraordinary services:

- RUBiss – RUB international student services provides extensive information, support and advice for all international students.
- Incoming and outgoing exchange students are offered a wide range of exchange programmes with partner universities worldwide, as well as special services at RUB.
- Research School is the university-wide graduate school of RUB supporting all doctoral researchers on campus by training of personal and interdisciplinary skills, career guidance, personal counselling and with research-related training offered by the faculties.
- Internationally mobile researchers are welcomed and supported in RUB’s Welcome Centre.
SERVICE FOR INTERNATIONAL MEMBERS

RUBISS – INTERNATIONAL STUDENT SERVICES

In order to be able to study successfully, it is important that you feel comfortable, both at university and in daily life. Only then will you be able to focus on your studies. "RUBiss – international student services" at the International Office offers services which go beyond your academic studies, such as advice and support in social, cultural and university-related affairs, as well as support with administrative tasks and legal affairs concerning foreign nationals.

RUBiss offers:

- Support and advice on various matters
- Orientation and welcome events
- Events and excursions

We assist you in arranging your legal affairs with the foreign citizens’ office, the city of Bochum and various other officials. We will also advice you on general questions concerning your studies and living in Bochum and Germany.

Events are organised both at the beginning and during the semester. On various excursions, you will have the opportunity to become acquainted with your new surroundings, settle in and meet fellow students.

At the start of every semester, RUBiss organises orientation events for international students: Orientation Days take place in the weeks before lectures start and are open to all new international students. Participation is free of charge.

Every semester, members of staff from the International Office, accompanied by the Rector himself, welcome the new international students to RUB at the International Welcome. RUBiss as well as various university institutions introduce themselves and present their offers for international students.

The RUBiss team publishes a semester programme every semester. In it, you will find a range of different events, workshops and excursions. You can also register for our newsletter to stay informed on current events.

RUBiss, International Office
Email: RUBiss@rub.de
Internet: www.international.rub.de/rubiss
Facebook group: RUBiss – RUB international student services
EXCHANGE PROGRAMMES

RUB offers a variety of opportunities for student exchange. An exchange programme is certainly the easiest, safest and cheapest of all possibilities to go abroad. The most commonly known exchange programme is the EU’s ERASMUS. Ruhr-Universität Bochum has some 300 partner universities all over Europe. Students can spend 3 - 12 months abroad in one of the 28 EU member states, Iceland, Norway, Macedonia (FYROM), Liechtenstein and Turkey and they will be supported financially by the ERASMUS Mobility Grant.

In addition to the ERASMUS universities involved in the exchange programme, RUB closely cooperates with the following universities:

- Universidade Federal de Minas Gerais, Belo Horizonte, Brazil
- Universidade de Brasília, Brazil
- Universidade Federal do ABC, São Paulo, Brazil
- Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil
- Universidade Federal do Rio Grande do Norte, Natal, Brazil
- Universidade Federal Fluminense (UFF), Niteróí, Brazil
- Universidade Federal de Juiz de Fora (UFJF), Juiz de Fora, Brazil
- Universidad Tecnológica Nacional, Argentina
- Universidad de Monterrey, Mexico
- Universidad Autónoma de Nuevo León, Monterrey, Mexico
- Universidad Autónoma Metropolitana, Mexico City, Mexico
- Benemérita Universidad Autónoma de Puebla, Mexico
- Universidad Católica del Norte, Antofagasta/Coquimbo, Chile
- Universidad de La Serena, Región de Coquimbo, Chile
- Universidad Santo Tomás, Colombia
- National Taiwan University, Taipei, Taiwan
- EWHA Woman’s University, Seoul, Korea
- Soongsil University, Seoul, Korea
- Sogang University, Seoul, Korea
- Sungkyunkwan University, Seoul
- Kyungpook National University, Daegu, Korea
- Osaka University, Japan

The following universities offer RUB students a monthly scholarship in addition to the reimbursement of tuition fees:

- Université François Rabelais in Tours, France
- Universidad de Oviedo, Spain
- Belarusian State University Minsk, Belarus
- Tongji University in Shanghai, China

Students at all of these universities may study at RUB for one or two semesters without having to pay any tuition fees.

RUB is also a member of the Utrecht Network. Within this network, 32 European universities are working together on topics of internationalisation and exchange. The Utrecht Network has strong links with the MAUI (Mid-America Universities International) Network and AEN (Australian-European Network). The following universities are members of these networks:
a) MAUI:

<table>
<thead>
<tr>
<th>Baylor University</th>
<th>Texas State University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waco, TX</td>
<td>San Marcos, TX</td>
</tr>
<tr>
<td>Kansas State University</td>
<td>University of Missouri</td>
</tr>
<tr>
<td>Manhattan, KS</td>
<td>Kansas City, MO</td>
</tr>
<tr>
<td>Missouri University of</td>
<td>University of Missouri</td>
</tr>
<tr>
<td>Science &amp; Technology</td>
<td>St. Louis, MO</td>
</tr>
<tr>
<td>Rolla, MO</td>
<td></td>
</tr>
<tr>
<td>Oklahoma State University</td>
<td>University of Nebraska</td>
</tr>
<tr>
<td>Stillwater, OK</td>
<td>Kearney, NE</td>
</tr>
<tr>
<td>Southern Illinois</td>
<td>University of Nebraska</td>
</tr>
<tr>
<td>University at</td>
<td>Lincoln, NE</td>
</tr>
<tr>
<td>Carbondale, IL</td>
<td></td>
</tr>
<tr>
<td>Texas Tech University</td>
<td>University of Nebraska</td>
</tr>
<tr>
<td>Lubbock, TX</td>
<td>Omaha, NE</td>
</tr>
<tr>
<td>University of Kansas</td>
<td>University of Oklahoma</td>
</tr>
<tr>
<td>Lawrence, KS</td>
<td>Norman, OK</td>
</tr>
</tbody>
</table>

b) AEN:

<table>
<thead>
<tr>
<th>Deakin University</th>
<th>University of Tasmania</th>
</tr>
</thead>
<tbody>
<tr>
<td>Victoria</td>
<td>Tasmania</td>
</tr>
<tr>
<td>Edith Cowan University</td>
<td>University of Western Sydney</td>
</tr>
<tr>
<td>Western Australia</td>
<td>New South Wales</td>
</tr>
<tr>
<td>Griffith University</td>
<td>University of Wollongong</td>
</tr>
<tr>
<td>Queensland</td>
<td>New South Wales</td>
</tr>
<tr>
<td>Macquarie University</td>
<td></td>
</tr>
<tr>
<td>New South Wales</td>
<td></td>
</tr>
</tbody>
</table>

Student exchanges take place on a regular basis through the MAUI Utrecht Network Exchange Programme and the AEN Utrecht Network Exchange Programme. Students from all areas of study may participate (only students from the Faculty of Medicine are excluded from the MAUI and AEN Utrecht Network exchange programmes). All tuition fees at the host institution will be reimbursed.

Furthermore, many faculties run their own exchange programmes:

Faculty of Historical Science:
- Kyushu University, Japan

English/American Studies:
- Central Michigan University, USA

Slavonic Studies:
- Institute of European Cultures, Moscow, Russia
- Moscow State University of Railway Engineering, Russia
- Kursk State University, Russia
- Vologda State Pedagogical University, Russia
- Vologda State Technical University, Russia
- Belarusian State University Minsk, Belarus
- Simferopol State University, Ukraine
Faculty of Economics:
- Tongji University in Shanghai, China
- Nihon University in Tokyo, Japan
- East Anglia University, UK
- HSBC Business School of Peking University Shenzhen, China

Faculty of Social Science:
- El Colegio de la Frontera Norte, Mexico

Faculty of East Asian Studies:
- Nihon University in Tokyo, Japan
- Fukushima University in Fukushima, Japan
- Keio University in Tokyo, Japan
- Okayama University in Okayama, Japan
- Mie University in Tsu, Japan
- Kwansei Gakuin University in Nishinomiya, Japan
- Kyushu University, Japan
- Niigata University, Japan

Faculty of Psychology:
- Universidad Santo Tomás, Colombia

Faculty of Civil and Environmental Engineering:
- Toyohashi University of Technology in Toyohashi, Japan
- Texas A&M University in College Station, USA

Faculty of Mechanical Engineering:
- Toyohashi University of Technology in Toyohashi, Japan
- Tongji University in Shanghai, China
- Texas A&M University in College Station, USA
- Drexel University in Philadelphia, USA
- Virginia Tech in Blacksburg, USA

Faculty of Electrical Engineering and Information Technology:
- Purdue University in West Lafayette, Indiana, USA
- Drexel University in Philadelphia, USA

Faculty of Geosciences:
- Universidad Nacional de San Juan, Argentina

Faculty of Medicine:
- Gunma University, Japan
- University of Toyama, Japan
Students from those universities listed above, who are interested in spending one or two semesters at RUB, should contact the International Office or their faculty at their home university to check exchange possibilities. After being nominated for an exchange programme, you are welcome to contact RUB’s Incoming Exchange Student Services.

RUB students wanting to spend part of their studies abroad are welcome to contact the Outgoing Exchange Student Services located at the International Office.

Incoming Exchange Student Services
International Office
Ruhr-Universität Bochum
Email: meike.schaich@uv.rub.de
         Theodoros.markakidis@uv.rub.de
Internet: www.international.rub.de/gaststudis

Outgoing Exchange Student Services
International Office
Ruhr-Universität Bochum
Email: anika.odenbach@uv.rub.de (USA, Australia, ERASMUS)
         jonna.haensel@uv.rub.de (Asia, ERASMUS)
         uta.baier@uv.rub.de (Latin America, ERASMUS)
Internet: www.international.rub.de/ausland
RUB RESEARCH SCHOOL: MORE THAN RESEARCH

Research School supports doctoral researchers and early postdocs during their research careers at RUB.

RUB Research School and its 20 faculties promote top-level postgraduate education in an international and interdisciplinary research environment and support the individual research interests of doctoral researchers. All enrolled doctoral researchers - from natural sciences and engineering to the life sciences and the humanities and social sciences - are members of the Research School. Early postdocs are also most welcome to participate in our programme.

Research School makes visible the research-related training offered by the faculties and research areas of RUB. Dedicated counselling offers, training of personal skills (e.g. scientific communication, proposal writing, leadership skills) and various inter- and transdisciplinary events such as Science College, Research Day support young researchers during their doctorate. In addition we offer career guidance for a career in- and outside academia preparing doctoral researchers and early postdocs for their next career steps. If you have questions concerning planning or starting your doctorate at RUB you are most welcome to contact us.

Doctoral researchers who wish to internationalize their research project and broaden their scientific network around the world can be financially supported by Research School PLUS until the end of 2017.

On our website doctoral researchers and postdocs get all information about our programme and offers. You are always most welcome to contact us any time during our office hours and come with your questions about starting or doing a Dr. or a Ph.D at RUB.

We are looking forward to seeing you soon!

Central Coordination Office
RUB Research School
Ruhr-Universität Bochum
Internet: http://www.research-school.rub.de
WELCOME CENTRE FOR INTERNATIONAL RESEARCHERS

The Welcome Centre is the place to go for international researchers and their families who seek advice and support regarding their research stay at Ruhr-Universität Bochum. We offer information and services on topics such as residence formalities, health insurance or family issues, as well as helpful hints for a smooth social integration and everyday life in Germany. Welcome Centre also provides advice to hosts and faculties at RUB.

Services

- Guide for international researchers
- Webpage with information and forms in English and German language
- Support in dealing with formalities and authorities
- Guest apartments for international researchers and their families
- Information on other relevant issues connected to your stay
- International Lounge

Welcome Centre Events

The Welcome Centre invites international researchers and their families to various events such as excursions throughout the region, receptions of the rectorate on a regular basis, intercultural trainings, information events and many more.

International Lounge

Ruhr-Universität Bochum has a modern, comfortable lounge for international researchers, their families and hosts. At the lounge they have the possibility to get together to talk and work or simply to have a coffee and read an international journal. During opening hours there is always someone present at the Lounge to answer any general questions you may have.

EURAXESS

The Welcome Centre in Bochum is registered as a EURAXESS Service Centre – EURAXESS is an EU wide network providing information and advice for internationally mobile researchers.

Welcome Centre, International Office
Ruhr-Universität Bochum
International Lounge, „Mensa“ building
Email: welcome-centre@rub.de
Internet: www.rub.de/welcome-centre

International Lounge for visiting researchers:
Mensa building, main entrance, Bistro level
STUDYING AT RUB

DEGREE PROGRAMMES TAUGHT IN ENGLISH

Numerous degree programmes at RUB are taught in English, many of them specialising in contemporary research topics and/or offering double and joint degrees with distinguished universities:

Lasers and Photonics
Faculty of Electrical Engineering and Information Technology
Degree: Master of Science (single degree)
Application deadline: 15 July (winter semester) and 15 January (summer semester)
Prerequisites: above-average Bachelor’s degree (at least 6 semesters) in Electrical Engineering, Mechanical Engineering, Physics, Chemistry or similar; very good English language skills. See programme website for further details.
Fees: RUB’s social fee 303,04 € (per semester)
Contact: Biljana Cubaleska. Phone: +49 (0)234 32-29474, email: studienberatung@ei.rub.de
More information: www.ei.rub.de/studium/lap

Master of Arts in Development Management
Institute of Development Research and Development Policy
Degree: Master of Arts (single degree)
Application deadline: Next intake: October 2016. Application Deadlines will be published on the programme website.
Prerequisites: above-average BA or relevant degree in Political Science, Social Science, Law, Economics, Geography or any other subjects related to the planning and evaluation of development programmes and projects; practical experience in a relevant field; very good English language skills. See programme website for further details.
Fees: RUB’s social fee 303,04 € (per semester)
Special feature: DAAD scholarships available; twin programme in Cape Town, S.A.
Contact: Dr. Meik Nowak. Phone: +49 (0)234 / 32-22458, email: ieemdm@rub.de

Materials Science and Simulation
Interdisciplinary Centre for Advanced Materials Simulation (ICAMS)
Degree: Master of Science (single degree)
Application deadline: see www.icams.de/content/masters-course-mss/application-and-admission
Prerequisites: Bachelor’s degree (B. Sc.) or comparable degree in one of the following or related disciplines: Materials Science, Mechanical Engineering, Physics, Civil and Environmental Engineering, Electrical Engineering, Chemical Engineering, Power Engineering, Chemistry, Nanotechnology, Mathematics, Computer Sciences or Astronomy; very good English language skills. See programme website for further details.
Fees: RUB’s social fee 303,04 € (per semester)
Contact: Prof. Dr. rer. nat Alexander Hartmaier. Phone: +49 (0)234/32-29314, email: mss@icams.rub.de / More information: www.icams.de/mss
**Master of Science in Physics**

Faculty of Physics and Astronomy  
**Degree:** Master of Science (single degree)  
**Application deadline:** 15 July (winter semester), 15 January (summer semester)  
**Prerequisites:** German or equivalent Bachelor of Science in Physics or a related field (e.g. mathematics, engineering or natural sciences); very good English language skills. See programme website for further details. Concerning admission requirements please contact the councilor (see contact).  
**Fees:** RUB’s social fee 303,04 € (per semester)  
**Contact:** Dr. Ivonne Möller: +49 (0)234 / 32-29105, email: studienberater_mp@physik.rub.de  
**More information:** [www.physik.ruhr-uni-bochum.de/studium/studiengaenge/master-of-science.html](http://www.physik.ruhr-uni-bochum.de/studium/studiengaenge/master-of-science.html)

**Molecular Sciences (iMOS)**

Faculty of Chemistry and Biochemistry  
**Degree:** Master of Science (single degree)  
**Application deadline:** 15 July. The course starts in winter semester (October) each year.  
**Prerequisites** A B.Sc. Degree or international equivalent with an average mark better than 1.9 in Chemistry, Physics, Biochemistry, Engineering or a related interdisciplinary subject; very good English language skills. See programme website for further details.  
**Fees:** RUB’s social fee 303,04 € (per semester)  
**Contact:** Dr. Gerhard Schwaab. Phone: +49 (0)234 / 32-24256, email: imos@rub.de  
**More information:** [www.rub.de/imos](http://www.rub.de/imos)

**Computational Engineering**

Faculty of Civil and Environmental Engineering  
**Degree:** Master of Science (single degree)  
**Application deadline:** international students 1 May, national students 15 September  
**Prerequisites:** above-average Bachelor’s (or comparable) degree in Civil Engineering, Mechanical Engineering or a related engineering field. Students who only have a Bachelor’s degree in Computer Science can not be accepted. Very good English language skills, see programme website for further details.  
**Fees:** RUB’s social fee 303,04 € (per semester)  
**Special feature:** twin programme at the Vietnamese-German University in Ho Chi Minh City  
**Contact:** Dipl.-Ing. Jörg Sahlmen. Phone: +49 (0)234 / 32-22103, email: comp-eng@rub.de  
**More information:** [http://compeng.rub.de](http://compeng.rub.de)

**Geosciences – Resources and Energy**

Faculty of Geosciences  
**Degree:** Master of Science (single degree)  
**Application deadline:** 15 July
Prerequisites: B.Sc. in Geosciences or related natural sciences, German and very good English language skills (see programme website for further details) and sufficient physical fitness to perform fieldwork
Fees: RUB’s social fee 303.04 € (per semester)
Special feature: prepares students for subsequent employment in the industry (mainly hydrocarbon industry)
Contact: Prof. Dr. Adrian Immenhauser. Phone: +49 (0)234 / 32-28250, email: adrian.immenhauser@rub.de
More information: http://www.gmg.rub.de/studium/studgang

Master of Science in Biochemistry
Faculty of Chemistry and Biochemistry
Degree: Master of Science (single degree)
Application deadline: 15 July
Prerequisites: above-average German or equivalent Bachelor of Science in Biochemistry or a related field; very good English language skills. See programme website for further details.
Fees: RUB’s social fee 303.04 € (per semester)
Contact: Prof. Dr. Irmgard D. Dietzel-Meyer. Phone: +49 (0)234 / 32-25803, email: bc-schwerpunkte@rub.de
More information: www.chemie.rub.de/studium/master/biochemie

Master of Science in Chemistry
Faculty of Chemistry and Biochemistry
Degree: Master of Science (single degree)
Application deadline: 15 July
Prerequisites: above-average German or equivalent Bachelor of Science in Chemistry or a related field; very good English language skills. See programme website for further details.
Fees: RUB’s social fee 303.04 € (per semester)
Contact: Gundula Talbot: +49 (0)234 / 32-26908, email: gundula.talbot@rub.de.
More information: www.chemie.ruhr-uni-bochum.de/studium/master/chemie

Master of Science in Economics
Faculty of Management and Economics
Degree: Master of Science (single degree)
Application deadline: 15 July (winter semester), 15 January (summer semester)
Prerequisites: A Bachelor’s degree in economics or a related discipline (business, statistics, mathematics, political science, international relations, etc.) with a duration of at least six semesters (180 ECTS credit points). As the program is taught entirely in English, applicants need to have very good English language skills. For further details on admission requirements please visit the programme website or contact the programme coordinator.
Fees: RUB’s social fee 303.04 € (per semester)
Contact: Dipl.-Ök. Michèle Lorraine Teufel, tel.: 0234 32-22687 email: econmaster@rub.de
More information: www.rub.de/econmaster/Course catalogue: rub.de/econmaster/download.html
Master of Cognitive Science
Faculty of Psychology
Degree: Master of Science (single degree)
Application deadline: 15 July
Prerequisites: excellent Bachelor’s degree in philosophy, psychology, neuroscience, mathematics, biology, computer science or linguistics and similar subjects, extremely high motivation to study; very good English language skills. See programme website for further details.
Fees: RUB’s social fee 303,04 € (per semester)
Contact: Dr. Andreas Utsch, Tel.: 0234 / 32-27895, email: andreas.utsch@rub.de.

Ethics – Economics, Law and Politics
Jointly offered by the Faculties of Philosophy, Law, Economics and Social Science
Degree: Master of Science (single degree)
Application deadline: 15 July
Prerequisites: an interdisciplinary frame of mind, first graduation (BA) in Philosophy, Political Science, Law, or Economics; very good English language skills. See programme website for further details.
Fees: RUB’s social fee 303,04 € (per semester)
Contact: Dr. Simone Heinemann: Tel.: 0234 / 32-24733, email: Simone.Heinemann@rub.de.

DOUBLE AND JOINT DEGREES

Several double and joint degree programmes provide the opportunity to profit from additional lectures offered by reputable partner institutions, to obtain the degree of a partner university alongside the RUB-degree without prolongation of the duration of your studies and to strengthen your intercultural competencies.
For a list of all double / joint degree programmes including recent changes please check www.international.rub.de/profil/lehre/doppelabschluss.

Double Master’s Degree Germanistik with Universiteit van Amsterdam
Intercultural Master programme taught in German, starting in August. Strong focus on practical application. Students spend the first two semesters in Amsterdam and the third and fourth semester in Bochum.

Contact:
Name: Prof. Bernd Bastert
Email: bernd.bastert@rub.de
www.germanistik.rub.de/ambo/

Double Master’s Degree “Comparative Literature” with Università di Bergamo
Students spend the first semester in Bochum, the second and the third semester in Bergamo and the last (fourth) semester again in Bochum. Upon successful completion of the studies, they will be awarded a Master’s degree of both RUB and Università di Bergamo.

Contact:
Name: Dr. Peter Goßens / Email: peter.gossens@rub.de
Double Master’s Degree Development Management with University of the Western Cape, Capetown

International Master programme taught in English. Well performing and committed students who register for the MA in Development Management of Ruhr University Bochum have the possibility to obtain a second degree of our partner, the University of the Western Cape (UWC), South Africa, by submitting a second Master’s thesis and successfully completing additional coursework. (For details, see programme website.)

Contact:
Name: Dr. Gabriele Baecker
Email: gabriele.baecker@rub.de
Name: Dr. Meik Novak
Email: Meik.Nowak@rub.de
http://www.development-research.org/index.php/study-programmes/madm.html

Double Master’s Degree in Gender Studies with the University of Graz

A double degree "Master of Arts" is awarded, a full academic degree in both participating countries. The degree course focuses on an international, mainly European, perspective on Gender Studies.

Contact:
Name: Maximiliane Brand
Email: GenderStudies@rub.de

Double Master’s Degree "Russian Culture" with RGGU in Moscow

Students of (Russian) Culture at the RGGU and at RUB obtain a Master degree of the RUB and of the RGGU after successfully completing their studies.

Contact:
Name: Dr. Klaus Waschik
Email: Klaus.waschik@rub.de

Joint European Master’s Programme in International Humanitarian Action (NOHA)

Institute of International Law of Peace and Armed Conflict

Degree: Master of Arts (joint degree)

Application deadline: 15 March

Prerequisites: Master’s degree (or equivalent) in International Relations, History, Law, Medicine, Psychology, Sociology, Anthropology, Economics, Management, Geography, Spatial Sciences or related fields

Fees: participation costs €12,600 for non-European students; €8,400 for European students (one-off payment), RUB’s social fee 303,04 € (per semester)

Special feature: Erasmus Mundus Programme

Contact: Prof. Dr. Hans-Joachim Heintze Email: Hans-Joachim.Heintze@rub.de
More information: http://www.ruhr-uni-bochum.de/ifhv

Double Master’s Degree in Management and/or Economics with UEA, Norwich

10 double degree places are offered for students of the Master of Economics or Master of Management and Economics. The second and third semester are spent in Norwich.

Contact:
Name: Prof. Dr. Michael Roos
Email: Michael.Roos@rub.de
Name: Christina Seeger
Email: Christina.Seeger@rub.de

More information: http://www.wiwi.rub.de/international/doubleprogrammes/uea_double.html.en
Double Master’s degree in Transformation of Urban Landscapes (TUL)
Faculty of Geosciences, Department of Geography
**Degree:** Master of Science in Transformation in Urban Landscapes (RUB) and Master of Engineering in Landscape Studies (Tongji University)
**Application deadline:** 15 July (winter semester)
**Prerequisites:** Bachelor of Science degree in Geography, Spatial Planning (‘Raumplanung’) or familiar equivalent study programmes from Germany or other countries. Thorough knowledge of English.
**Fees:** RUB’s social fee €303.04 (per semester)
**Contact:** Prof. Dr. Harald Zepp. +49 234 32-23313, email: gi-research@rub.de
**More information:** [www.geographie.rub.de/transformation-urbaner-landschaften](http://www.geographie.rub.de/transformation-urbaner-landschaften)

Molecular and Developmental Stem Cell Biology
Faculty of Medicine
**Degree:** Master of Science (double degree)
**Application deadline:** 15 July (winter semester)
**Prerequisites:** Top Bachelor's degree in the Life Sciences (e.g. B.Sc. in Biology, Microbiology, Biomedicine, Molecular Biology) or a state examination/Master's in a medical subject; proof of good basic mathematical skills, very good English language skills. See programme website for further details: [www.rub.de/istem](http://www.rub.de/istem)
**Fees:** RUB’s social fee €303.04 (per semester)
**Contact:**
Name: Prof. Dr. Brand-Saberi. Phone: +49 (0)234 32-24556,
Email: istem@rub.de

Double Master’s Degree for students of “Financial Services" at the CDHK at Tongji-University, Shanghai, with the Faculty of Economics
Students of the CDHK can continue their studies at RUB from the 4th semester onwards.
**Contact:**
Name: Prof. Dr. Bernhard Pellens
Email: pellens@iur.rub.de

Double Master’s Degree of the Faculty of Mechanical Engineering with the CDHK at Tongji University, Shanghai
A double degree in production techniques can be obtained by German and Chinese students (studying at both locations).
**Contact:**
Name: Prof. Dr.-Ing. Michael Abramovici
Email: Michael.Abramovici@itm.ruhr-uni-bochum.de

Double Bachelor’s Degree in History with Université François Rabelais Tours
The students study at their home university for two semesters, then change to the partner university for semesters 3 and 4. The 5th semester is spent in Tours by all students, the 6th in Bochum. Language of instruction in Tours is French.
**Contact:**
Name: Prof. Dr. Gerhard Lubich
Email: Gerhard.lubich@rub.de
Dr. Jens Lieven
Email: jens.lieven@ruhr-uni-bochum.de
Double Master’s Degree in History with Université François Rabelais Tours

Research oriented double degree programme. Students spend their first semester in Tours and their second semester in Bochum jointly as one cohort. They continue their studies in the third semester at the partner university (RUB students in Tours and vice versa) and the fourth semester at their home university. Language of instruction in Tours is French.

Contact:
Name: Prof. Dr. Gerhard Lubich
Email: Gerhard.lubich@rub.de

More information: http://www.ruhr-uni-bochum.de/isg/informationenma.html.de

Double Master’s Degree “Diskurse und Praktiken kultureller Vermittlung / Discours et Pratiques de Médiations culturelles” with Université François Rabelais Tours

Students will spend the first and the second semester in Bochum (the second semester jointly with students from Tours) and the third and fourth at Université Tours. Upon completion of the studies, they will be awarded a Master's degree of both RUB and Université Tours. Language of instruction in Tours is French.

Contact:
Name: Prof. Linda Simonis
Email: Linda.Simonis@ruhr-uni-bochum.de

Double Bachelor’s / Master’s Degree in National and European Law with Université François Rabelais Tours

Both double Bachelor’s and double Master’s degree. Students spend two semesters together in Bochum and two in Tours.

Contact:
Name: Prof. Dr. Adelheid Puttler
Email: dfbs-info@rub.de

Double Master’s Degree in Philology (French Department) with Université François Rabelais Tours

Students of both partner universities can spend the last year of their studies at the partner institution. Students will be awarded a Master's degree of both RUB and Université Tours. Language of instruction in Tours is French.

Contact:
Name: Jürgen Niemeyer
Email: Juergen.Niemeyer@rub.de

European Master's Programme in Human Rights and Democratisation

Institute of International Law of Peace and Armed Conflict
Degree: Master of Arts (joint degree)
Prerequisites: university degree of a high standard in a field relevant to human rights, including disciplines of Law, Social Sciences and the Humanities and a minimum of 180 ECTS credits (Bachelor’s/general degree)
Fees: tuition fees €4900 (one-off payment), enrolment fee €150, application processing fee €50, RUB’s social fee €303.04 (per semester)
**Special feature**: first semester taught in Venice

**Contact**:
Name Prof. Dr. Hans-Joachim Heintze
Email: Hans-Joachim.Heintze@rub.de

**More information**: www.emahumanrights.org

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**Joint Master's Degree Film and Audiovisual Media**

Integrated studies in three different European countries, at key media and media studies locations (Goethe-Universität Frankfurt, Université Sorbonne Nouvelle Paris 3, Université de Paris Ouest Nanterre Paris 10, Università degli Studi di Udine, Università Cattolica del Sacro Cuore di Milano, Université de Liège, Birkbeck College London, Universitat Pompeu Fabra de Barcelona, Université Lille 3, Università Roma 3, University of Amsterdam, Université de Montréal). Second and third semesters have to be spent at different partner universities.

**Contact**:
Name: Prof. Dr. Oliver Fahle
Email: Oliver.Fahle@rub.de

Name: Elisa Linseisen
Email: elisa.linseisen@rub.de

www.rub.de/ifm/studium/master-film-av.html
LANGUAGE COURSES

ZFA – CENTER FOR FOREIGN LANGUAGE TRAINING

a) Language Courses
The University Language Centre (Zentrum für Fremdsprachenausbildung, ZFA) provides courses aimed at specialist and non-specialist language learners, with a particular focus on the key attributes of developing cultural awareness and intercultural communicative competence in an academic setting. Classes take place during the semester and, in the form of intensive courses, during the semester break.

The University Language Centre currently offers classes for 14 different languages: Arabic, Chinese, Dutch, English, French, Italian, Japanese, Norwegian, Polish, Portuguese, Russian, Spanish, Swedish, and Turkish.

More Information: www.rub.de/zfa

b) German as a Foreign Language
In addition to the language courses listed above, there are numerous offers for German as a Foreign Language. In addition to preparatory courses, there are a lot of courses that may be taken during the semester alongside regular studies. These courses are designed for the special needs of international students, PhD students, and international researchers.


c) Certification
In some of the courses for the languages listed above, there is the possibility to achieve special certificates:
TestDaF (Deutsch als Fremdsprache – German as a Foreign Language); UNIcert® (Arabic, English, French, Italian, Japanese, Norwegian, Polish, Russian, Swedish, Spanish, Turkish); DELE (Spanish); CNaVT (Dutch); Swedex and Tisus (Swedish); DELF/DALF (French); IELTS (English) and DAAD-language certificate.

d) Individual Learning
The University Language Centre also provides various opportunities for individual learning and offers support, guidance, and individual assistance:
- Tandem (Two people with different native languages learn with and from each other in a systematic manner)
- Centre for self-organised learning
- Language-learning coaching

More information: http://www.ruhr-uni-bochum.de/zfa/sgl/index.html.de

Bochum Institute of Intensive Language Training (LSI – Landesspracheninstitut)

This institute offers intensive language courses for Arabic, Chinese, Japanese, and Russian, along with a smaller number of less intensive courses for Korean, Persian, Dari, and Turkish.
For more information, please visit: www.landesspracheninstitut-bochum.de
APPLICATION AND ADMISSION

If you are coming to RUB as an exchange student, you have to apply for an exchange programme at your home university. You will find all of the required information at www.international.rub.de/gaststudis.

If you wish to complete a degree at RUB, you are very welcome to submit your application. Please note, however, that you have to fulfil certain criteria in order to be able to study at RUB:

Your higher education entrance qualification must be recognised as equivalent to the German qualification. Your higher education entrance qualification (Hochschulzugangsberechtigung, HZB) is your school leaving certificate or proof of studies already completed at secondary education level. To qualify for admission to RUB, you must be able to prove that you possess the equivalent of the German Abitur qualification, which is the examination taken at the end of your secondary education.

You will find more information regarding this topic at: www.international.rub.de/bewerbung/zulassung/hzb

Furthermore, you need sufficient German skills for most degree programmes. The international degree programmes listed in the first chapter of this brochure are an exception and these Programmes have individual application procedures. A high standard of German language skills are required for successful completion of a regular course at Ruhr-Universität Bochum. Language skills can be proven by presenting a certificate gained for passing one of the following examinations:

- DSH examination (level 2 or 3)
- ZOP examination or Goethe-Zertifikat C2 of the Goethe-Institut
- German language diploma, level II, of the Goethe-Institut
- TestDaF with the grades 4 x 4 or 16 points
- Degree in German philology.

You will find more information on this subject at www.international.rub.de/bewerbung/zulassung/deutschkenntnisse

Ruhr-Universität Bochum offers an online application system. Application procedure can differ, depending on the country you are coming from and the subject you are planning to study at RUB.

You will find all of the necessary information and the online application tool at www.international.rub.de/bewerbung

Please note the application deadlines at RUB:
Application period, winter semester: 15/05 - 15/07
Application period, summer semester: 15/11 - 15/01

International degree programmes may have their own deadlines and application procedures. For more information, check the chapter “International Master Programmes”
INTERNATIONAL SEMINARS AND LECTURES

The following chapter contains a compilation of seminars and lectures (Bachelor, Master and PhD) held in English.

Please note: These seminars and lectures are NOT necessarily part of an international degree programme.

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FACULTY OF BIOLOGY AND BIOTECHNOLOGY

Developmental Neurobiology

Language: English

Department: Cellmorphology and molecular Neurobiology
Contact: Prof. Stefan Wiese, 0234-3222041, stefan.wiese@rub.de
Degree programme: Masters programme
Module: Developmental Neurobiology
Module taught entirely in English
Course type: Lecture, VV 190103
Credit Points: N/A
Teacher/Lecturer: Prof. Andreas Faissner, Prof. Stefan Wiese
Requirements: Bachelor´s degree in Biology, Chemistry, Stem cell biology

Room: NDEF 05/392
Day, Time: Monday, 18th April 2016, 8:15h
Begin: 18/04/2016

Course description:
The Lecture course deals with different aspects of developmental neurobiology and cell biology. The course is comprised of 20 lectures of 1 hour each.

Proofs of academic achievement: written examination

This course is open for refugees taking part in preparatory courses.

190616: Kolloquium zu Forschungsarbeiten des Lehrstuhls Pflanzenphysiologie

Language: English

Department: Plant Physiology
Contact: Angelika Ernst, 0234-32-28004, pflanlzj@rub.de
Degree programme: Bachelor/Master/PhD
Module: research at the institute
Module taught entirely in English.
Course type: Seminar
Credit Points: 2
Teacher/Lecturer: Prof. Dr. Ute Krämer/PD Dr. Markus Piotrowski/Prof. Dr. Danja Schünemann
Requirements:

Room: ND 3/34
Day, Time: Friday 8.30-10.00
Begin: 08/04/2016

Course description:
Talks about ongoing research at the institute

Proofs of academic achievement: participation and lecture
190617: Kolloquium Metallhomöostase; Grundlagen und Praxis des wissenschaftlichen Arbeitens in der Pflanzenphysiologie

Language: English

Department: Plant Physiology
Contact: Angelika Ernst, 0234-32-28004, pflanlzj@rub.de
Degree programme: Bachelor/Master/PhD
Module: Metal homeostasis in plants
Module taught entirely in English
Course type: Seminar
Credit Points: 1
Teacher/Lecturer: Prof. Dr. Ute Krämer
Requirements: -

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<td>ND 3/34</td>
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Course description:
Reports on research related to metal homeostasis and plant metabolism

Proofs of academic achievement: participation

190618: Journal Club Plant Physiology

Language: English

Department: Plant Physiology
Contact: Angelika Ernst, 0234-32-28004, pflanlzj@rub.de
Degree programme: Master/PhD
Module taught entirely in English.
Course type: Seminar
Credit Points: 1
Teacher/Lecturer: Prof. Dr. Ute Krämer
Requirements: -

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<td>ND 3/34</td>
<td>Monday 12-13 (every four weeks)</td>
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Course description:
Reports on recent publications in plant physiology

Proofs of academic achievement: report
FACULTY OF CIVIL AND ENVIRONMENTAL ENGINEERING

COMPUTATIONAL ENGINEERING

Fluid Dynamics (MSc-CE-P06)

Department: Computational Engineering
Contact: CompEng Office, IC 03/549, 0234/32-25485, compeng-support@rub.de
Degree programme: MSc. Computational Engineering
Module: Fluid Dynamics
Module taught entirely in English.
Course type: lecture (1h) and exercise (1h)
Credit Points: 3
Teacher/Lecturer: Prof. Dr.-Ing. R. Höffer, Dipl.-Ing. U. Winkelmann
Requirements: CE-P1, CE-P2, Fluid Mechanics (bachelor level)

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Course description:
The technical basics of dynamic fluid flows are introduced, studied and recapitulated as well as related problems which are relevant for practical applications and solution procedures with an emphasis put on computational aspects. The lectures and exercises contain the following topics:

• short review of hydrostatics and dynamics of incompressible flows involving friction (conservation of mass, energy and momentum, Navier-Stokes equations)
• potential flow
• isotropic turbulence and turbulence in a boundary layer flow
• flow over streamlined and bluff bodies

The students are guided in the exercises to working out assessment and solution strategies for related, typical technical problems in fluid dynamics.

Proofs of academic achievement: Written examination/ 75 minutes
This course is credited for „Optionalbereich“.
This course is open for refugees taking part in preparatory courses.
Continuum Mechanics (MSc-CE-P07)

Language: English

Department: Computational Engineering
Contact: CompEng Office, IC 03/549, 0234/32-25485, compeng-support@rub.de

Degree programme: MSc. Computational Engineering

Module: Continuum Mechanics
Module taught entirely in English

Course type: lecture (2h) and excercise (2h)

Credit Points: 6

Teacher/Lecturer: Prof. Dr. rer. nat. K. Hackl, Dr. rer. nat. Khanh Chau Le

Requirements: CE-P01, CE-P02

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<td>IC 04/410</td>
<td>Tuesday 8.30-10.00</td>
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<td>IC 03/112</td>
<td>Thursday 14.00-16.00</td>
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Course description:
The course starts with an introduction to the advanced analytical techniques of linear elasticity theory, then moves on to the continuum-mechanical concepts of nonlinear elasticity and ends with the discussion of material instabilities and microstructures. Numerous examples and applications will be given.

- Advanced Linear Elasticity
- Beltrami equation
- Navier equation
- stress-functions
- scalar-and vector potentials
- Galerkin-vector
- Love-function
- solution of Papkovich-Neuber
- Nonlinear Deformation
- Strain tensor
- Polar decomposition
- stress-tensors
- equilibrium
- strain-rates
- Nonlinear Elastic Materials
- Covariance and isotropy
- Hyperelastic materials
- constrained materials
- Hypoelastic materials
- objective rates
- material stability
- microstructures

Proofs of academic achievement: written examination/ 120 minutes

This course is credited for „Optionalbereich“.

This course is open for refugees taking part in preparatory courses.
Dynamics and Adaptronics (MSc-CE-WP03)

Language: English

Department: Computational Engineering

Contact: CompEng Office, IC 03/549, 0234/32-25485, compeng-support@rub.de

Degree programme: MSc. Computational Engineering

Module: Dynamics and Adaptronics
Module taught entirely in English.

Course type: lecture (2h) and exercise (2h)

Credit Points: 6

Teacher/Lecturer: Prof. Dr.-Ing. T. Nestorovic, Appl. Dr. rer. nat. Khanh Chau Le

Requirements: CE-P01, CE-P02, basic knowledge in Structural Mechanics, Control Theory and Active Mechanical Structures

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Part "Adaptronics" (Nestorovic) will take place in the 2nd half of the semester, room: CIP-Pool IC 04-630 (www.rub.de/mas)

Course description:
The course introduces the first principles of the dynamics of discrete and continuous mechanical systems: Newton laws and Hamilton variational principles. The force and energy methods for deriving the equation of motion for systems with a finite number of degrees of freedom as well as for continuous systems are demonstrated. The energy conservation law for conservative systems and the energy dissipation law for dissipative systems are studied. Various exact and approximate methods for solving dynamical problems, along with the Laplace transform method, the method of normal mode for coupled systems, and the Rayleigh method are developed for free and forced vibrations. Various practical examples and applications to resonance and active vibration control are shown.

Further, an overall insight of the modelling and control of active structures is given within the course. The terms and definitions as well as potential fields of application are introduced. For the purpose of the controller design for active structural control, the basics of the control theory are introduced: development of linear time invariant models, representation of linear differential equations systems in the state-space form, controllability, observability and stability conditions of control systems. The parallel description of the modelling methods in structural mechanics enables the students to understand the application of control approaches. For actuation/sensing purposes multifunctional active materials (piezo ceramics) are introduced as well as the basics of the numerical model development for structures with active materials. Control methods include time-continuous and discrete-time controllers in the state space for multiple-input multiple-output...
systems, as well as methods of the classical control theory for single-input single output systems. Differences and analogies between continuous and discrete time control systems are specified and highlighted on the basis of a pole placement method. Closed-loop controller design for active structures is explained. Different application examples and problem solutions show the feasibility and importance of the control methods for structural development. Within this course the students learn computer aided controller design and simulation using Matlab/Simulink software.

Proofs of academic achievement: written examination/150 minutes
This course is credited for „Optionalbereich“.
This course is open for refugees taking part in preparatory courses.

Finite Element Methods for Nonlinear Analyses of Materials and Structures (MSc-CE-WP06)

Language: English

Department: Computational Engineering
Contact: CompEng Office, IC 03/549, 0234/32-25485, compeng-support@rub.de
Degree programme: MSc. Computational Engineering
Module: Finite Element Methods for Nonlinear Analyses of Materials and Structures
Module taught entirely in English.
Course type: lecture including exercise (2h)
Credit Points: 3
Teacher/Lecturer: Prof. Dr. techn. G. Meschke, M.Sc. Abdullah Alsahly
Requirements: Basic knowledge of tensor analysis, continuum mechanics and linear Finite Element Methods is required; participation in the lecture „Advanced Finite Element Methods“ (CE-WP04) is strongly recommended

Room Day, Time Begin
IC 03/653 Monday 13.00-14.30 TBA

Course description:
The course is concerned with inelastic material models including their algorithmic formulation and implementation in the framework of nonlinear finite element analyses. Special attention will be paid to efficient algorithms for physically nonlinear structural analyses considering elastoplastic models for metals, soils and concrete as well as damaged based models for brittle materials. As a final assignment, the formulation and implementation of inelastic material models into an existing finite element programme and its application to nonlinear structural analyses will be performed in autonomous teamwork by the participants.

Proofs of academic achievement: Project work (implementation of nonlinear material models) and final student presentation within the scope of a seminar (100%)

This course is credited for „Optionalbereich“.
This course is open for refugees taking part in preparatory courses.
Computational Fluid Dynamics (MSc-CE-WP05)

**Language:** English

**Department:** Computational Engineering

**Contact:** CompEng Office, IC 03/549, 0234/32-25485, compeng-support@rub.de

**Degree programme:** MSc. Computational Engineering

**Module:** Computational Fluid Dynamics

Module taught entirely in English.

**Course type:** lecture (4h) and exercise (2h)

**Credit Points:** 6

**Teacher/Lecturer:** Prof. Dr. R. Verfürth

**Requirements:** Basic knowledge of: partial differential equations and their variational formulation, finite element methods, numerical methods for the solution of large linear and non-linear systems of equations

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**Course description:**

1st week: Modelization

2nd week: Notations and auxiliary results

3rd week: FE discretization of the Stokes equations. 1st attempt

4th to 5th week: Mixed finite element discretization of the Stokes equations

6th week: Petrov-Galerkin stabilization

7th week: Non-conforming methods

8th week: Streamline formulation

9th week: Numerical solution of the discrete problems

10th week: Adaptivity

11th week: FE discretization of the stationary incompressible Navier-Stokes equations variational problem; finite elements discretization; error estimates; streamline-diffusion stabilization; upwinding

12th week: Solution of the algebraic equations

13th week: Adaptivity

14th week: Finite element discretization of the instationary incompressible Navier-Stokes equations

14th week: Space-time adaptivity

14th week: Discretization of compressible and inviscid problems

**Proofs of academic achievement:** written examination/ 120 minute

This course is credited for „Optionalbereich“.

This course is open for refugees taking part in preparatory courses.
Numerical Simulation in Geotechnics and Tunnelling (MSc-BI-WP24 und MSc-CE-WP09)

Language: English

Department: Computational Engineering
Contact: CompEng Office, IC 03/549, 0234/32-25485, compeng-support@rub.de
Degree programme: MSc. Computational Engineering
Module: Numerical Simulation in Geotechnics and Tunnelling
Module taught entirely in English.
Course type: lecture (2h) and exercise (2h)
Credit Points: 6
Teacher/Lecturer: Prof. Dr. techn. G. Meschke, Dr. A. Lavasan, M.Sc. H. G. Bui, M.Sc. A. Marwan
Requirements: Fundamental knowledge in soil mechanics and FEM

Room
IC 03/653

Day, Time
Monday 13.00-14.30

Begin
TBA

First meeting on
11/04/2016 at 13.00 in IC 03/653

Course description:
Numerical Simulation in Geotechnics
The course gives an overall insight to the numerical simulation of geotechnical and tunneling problems by using the finite element method including constructional details, staged excavation processes and support measures. This encompasses material modeling, discretization in space and time and the evaluation of numerical results. The terms and expressions for creating proper numerical models showing appropriate mesh shapes, boundary and initial conditions are introduced. Different constitutive models with their parameters and potential fields of application for different materials are presented in order to show how accurate results can be obtained. To control the reliability of numerical models, the basics of constitutive parameter calibration, model validation and verification techniques are explained. In connection with the possibilities of 2D and 3D discretization, the basics of invariant model development are explained. To achieve a better understanding of the soil-water interactions in drained, undrained and consolidation analyses, fully coupled hydromechanical finite element solutions are described. Basics of local and global sensitivity analyses are introduced to address the effectiveness of the contributing constitutive parameters as well as constructional aspects within the sub-systems. To perform global sensitivity analyses, which usually requires a vast number of test runs, the meta modeling technique as a method for surrogate model generation is presented. All these methods are consequently applied in the context of a reference case study on a tunneling-related topic.

Numerical Simulation in Tunneling
This tutorial provides an overview of the most important aspects of realistic numerical simulations of tunnel excavation using the Finite Element Method including staged excavation processes and support measures. This encompasses material modeling, discretization in space
and time and the evaluation of numerical results. In the framework of the exercises nonlinear numerical analyses in tunneling will be performed by the participants in autonomous teamwork in the computer lab.

**Proofs of academic achievement:** Study work (100 %)

**This course is credited for „Optionalbereich“.**

**This course is open for refugees taking part in preparatory courses.**

### Advance Finite Element Methods (MSc-CE-WP04)

**Department:** Computational Engineering  
**Contact:** CompEng Office, IC 03/549, 0234/32-25485, compeng-support@rub.de  
**Degree programme:** MSc. Computational Engineering  
**Module:** Advanced Finite Element Methods  
Module taught entirely in English.  
**Course type:** lecture including exercise (4h)  
**Credit Points:** 6  
**Teacher/Lecturer:** Prof. Dr. techn. G. Meschke, M.Sc. Tagir Iskhakov, M.Sc. Yijian Zhan  
**Requirements:** Basics in Mathematics, Mechanics and Structural Analysis (Bachelor), good knowledge in Finite Element Methods in Linear Structural Mechanics (CE-P05)

**Room**  
IC 04/408  
**Day, Time**  
Monday 08.30-11:45  
**Begin**  
11/04/2016

**Course description:**  
Based upon a brief summary of non-linear continuum mechanics the weak form of non-linear elastodynamics, its consistent linearization and its finite element discretization are discussed and, in a first step, specialized to one-dimensional spatial truss elements to understand the principles of the formulation of geometrically nonlinear finite elements. In addition, an overview of nonlinear constitutive models including elasto-plastic and damage models is given. The second part of the lecture focuses on algorithms to solve the resulting non-linear equilibrium equations by load- and arc-length controlled Newton-type iteration schemes. Finally, the non-linear finite element method is used for the non-linear stability analysis of structures. The lectures are supplemented by exercises to support the understanding of the underlying theory and to demonstrate the application of the non-linear finite element method for the solution of selected examples. Furthermore, practical applications of the non-linear finite element method are demonstrated by means of a commercial finite element programme.

**Proofs of academic achievement:** Written examination / 120 minutes (85%), Homework & PC exercise (15%)

**This course is credited for „Optionalbereich“.**  
**This course is open for refugees taking part in preparatory courses.**
Object-oriented Modelling and Implementation of Structural Analysis Software (MSc-CE-WP10)

Department: Computational Engineering
Contact: CompEng Office, IC 03/549, 0234/32-25485, compeng-support@rub.de
Degree programme: MSc. Computational Engineering
Module: Object-oriented Modelling and Implementation of Structural Analysis Software
Module taught entirely in English.
Course type: Block seminar
Credit Points: 4
Teacher/Lecturer: Prof. Dr.-Ing. Matthias Baitsch, Prof. Dr. techn. G. Meschke, M.Sc. H. G. Bui
Requirements: Finite Element Methods in Linear Structural Mechanics and Modern Programming Concepts in Engineering

Room
TBA

Day, Time
25.07.-05.08.2016, 9:00 – 12:00

Begin
25.07.2016

Course description:
The seminar links the theory of finite element methods with object-oriented programming in the sense that the finite element theory is applied within a finite element program developed by the students. In order to gain insights into both topics – object-oriented programming and finite element theory – students implement an object-oriented finite element program for the analysis of spatial truss structures. This combination of the theory of numerical methods with object-oriented programming provides an inspiring basis for the successful study of computational engineering. In the lecture, the fundamentals of the finite element method and object-oriented programming are briefly summarized. The programming part of the course comprises two parts. In the first part, the topic is fixed: Students individually develop an object-oriented finite element program for the linear analysis of spatial truss structures. The program is verified by means of the static analysis of a representative benchmark and afterwards applied for the numerical analysis of an individually designed spatial truss structure. In the second part, students can choose between different options. Either, the application developed in the first part is extended to more challenging problems (nonlinear analysis, other element types, etc.) or students switch to an existing object-oriented finite element package (e.g. Kratos) and develop an extension of that software.

Proofs of academic achievement: Study project and oral examination

This course is credited for „Optionalbereich“.

This course is open for refugees taking part in preparatory courses.
Recent Advances in Numerical Modelling and Simulation (MSc-BI-W35)

Language: English

Department: Computational Engineering

Contact: CompEng Office, IC 03/549, 0234/32-25485, compeng-support@rub.de

Degree programme: MSc. Computational Engineering

Module: Recent Advances in Numerical Modelling and Simulation

Module taught entirely in English.

Course type: Seminar

Credit Points: 2

Teacher/Lecturer: Prof. Dr. techn. G. Meschke, Assistants and Guests

Requirements: Finite Element Methods

Room

IC 03/649

Day, Time

Fr, 16:00 – 19:00

Begin

TBA

Course description:

During the course, selected topics in the field of numerical modelling and simulation in structural mechanics will be presented. For each topic, the theory will be offered in the compact form with emphasis on the algorithms and specific numerical methods. Selected application examples will be demonstrated to validate the presented numerical models. The range of topics will be continuously updated to fit with the relevance of current research topics.

The concrete research topics will include, for example, the Extended Finite Element Method, Phase field methods or Discrete Element Method, for the analysis of fracture and fragmentation processes, coupled (thermo-mechanical, hydro-mechanical, chemi-mechanical) multiphase models (e.g. for analysis of ground water flow), durability analysis, multi-scale model (e.g. for Fiber composites), efficient method for fluid dynamics simulations (Computational Fluid Mechanics), methods for structural optimization or current development in High Performance Computing.

Depending on the topic, guest lectures will be included.

Proofs of academic achievement: Seminar presentation

This course is credited for „Optionalbereich“.

This course is open for refugees taking part in preparatory courses.
FACULTY OF ECONOMICS

Economics of Market Failure

Language: English

Department: Chair for Applied Microeconomics
Contact: Tel 0234/32-22887, appliedmicro@rub.de
Degree programme: BSc in Management and Economics
Module: Economics of Market Failure
Module taught entirely in English.
Course type: Lecture (2h) plus tutorial (2h)
Credit Points: 10 ECTS
Teacher/Lecturer: Prof. Dr. Julio R. Robledo and assistants
Requirements: Good knowledge of basic microeconomic theory, good command of English.

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<td>HZO 70</td>
<td>Monday 16.15-17.45</td>
<td>11/04/2016</td>
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<td>HZO 80</td>
<td>Tuesday 12.15-13.45</td>
<td>12/04/2016</td>
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Course description:
The module covers standard public economics allocation topics at an undergraduate level: equilibrium, Pareto-efficiency, public goods, externalities, asymmetric information, monopoly.

Proofs of academic achievement: Written examination
This course is credited for „Optionalbereich“. 
This course is open for refugees taking part in preparatory courses.

Microeconomics II

Language: English

Department: Chair for Applied Microeconomics
Contact: Tel 0234/32-22887, appliedmicro@rub.de
Degree programme: MSc in Economics, MSc in Management and Economics
Module: Microeconomics II
Module taught entirely in English.
Course type: Lecture (2h) plus tutorial (2h)
Credit Points: 5 ECTS
Teacher/Lecturer: Prof. Dr. Julio R. Robledo and assistants
Requirements: Good knowledge of basic microeconomic theory, good command of English.
Course description:
The module covers standard IO topics at master level: monopoly, oligopoly, product differentiation, pricing strategies, mergers.

Proofs of academic achievement: Written examination

This course is open for refugees taking part in preparatory courses.

Network Economics

Language: English

Department: Chair for Applied Microeconomics
Contact: Tel 0234/32-22887, appliedmicro@rub.de
Degree programme: MSc in Economics, MSc in Management and Economics
Module: Network Economics
Module taught entirely in English.
Course type: Lecture (2h) plus tutorial (2h)
Credit Points: 5 ECTS
Teacher/Lecturer: Prof. Dr. Julio R. Robledo and assistants
Requirements: Good knowledge of basic microeconomic theory, good command of English.

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<td>GC 03/42</td>
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<td>GBCF 04/411</td>
<td>Wednesday 10.15-11.45</td>
<td>13/04/2016</td>
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Course description:
This module analyses competition on network markets with tools of industrial economics. Topics are complementarities, compatibility, network externalities, switching costs etc. Focus on, hardware and software industry, telecommunication, informational goods, bank networks, etc.

Proofs of academic achievement: Written examination

This course is open for refugees taking part in preparatory courses.
FACULTY OF GEOSCIENCES

Microeconomics of Competitiveness: Firms, Clusters and Economic Development

Language: English

Department: Geographisches Institut
Contact: Prof. Dr. Matthias Kiese, Tel. 23436, matthias.kiese@rub.de
Degree programme: Master of Science (Geography)
Module: 170096 Microeconomics of Competitiveness: Firms, Clusters and Economic Development
Module taught entirely in English.
Course type: Seminar
Credit Points: 6
Teacher/Lecturer: Prof. Dr. Matthias Kiese, Dr. Christian Hundt
Requirements: M.Sc. students in Geography, Master and PhD students from other programmes (esp. Political Science, Economics, Management Studies, International Development)

Room
NA 7/128

Day, Time
Monday, 14.00 – 17.00

Begin
11.04.2016

Course description:
Microeconomics of Competitiveness (MOC) is a graduate course created in a multiyear development effort by Professor Michael E. Porter and the staff and affiliates of the Institute for Strategy and Competitiveness at Harvard Business School. The course explores the determinants of competitiveness and successful economic development from a bottom-up, microeconomic perspective. While sound macroeconomic policies, stable legal and political institutions, and improving social conditions create the potential for competitiveness, wealth is actually created at the microeconomic level. The sophistication and productivity of firms, the vitality of clusters, and the quality of the business environment in which competition takes place are the ultimate determinants of a nation's or region's productivity.
Following Harvard's tradition, the course is based on case studies only. Each session deals with a particular company, region or country case investigating the drivers of competitiveness. As preparation for each session, all students are required to read the respective case of approx. 20 pages. A three-hour session will typically include case discussions in small and large groups, audio-visual inputs featuring Professor Porter and case protagonists, as well as a brief lecture input introducing the key theoretical concept illustrated by the case. As coursework, groups of up to four students prepare a case study analysing the competitiveness of a cluster of their own choice. For further details, please refer to http://www.geographie.ruhr-uni-bochum.de/arbeitsbereiche/stadt-und-regionaloekonomie/microeconomics-of-competitiveness.

Proofs of academic achievement: Student Paper (100 %). As precondition for their paper being accepted, students are required to be present in class, and to contribute actively to case discussions.

This course is credited for „Optionalbereich“.
Transformation Laboratory I "From Analysis to Consultancy" (TransLab I)

Language: English

Department: Geographisches Institut

Contact: Prof. Dr. Harald Zepp, Tel. 23313, Harald.Zepp@rub.de

Degree programme: International Double-Degree Master Program "Transformation of Urban Landscapes"

Module: 170200 Transformation Laboratory I "From Analysis to Consultancy" (TransLab I)

Module taught entirely in English.

Course type: Seminar

Credit Points: 10

Teacher/Lecturer: Prof. Dr. R. Heyer, Prof. Dr. H. Zepp

Requirements: Bachelor Degree in Geography, Bachelor Degree in Spatial Planning

Room
NABF 04/590

Day, Time
Tuesday 08.00 – 12.00

Begin
12.04.2016

Course description:

Learning outcome:
The students are able to analyse conditions, strategies, concepts, processes and outcomes of urban landscape transformation in a multi-dimensional and multi-perspective way based on interdisciplinary approaches in a team. They have tested and expanded their analytical know-how in a laboratory of landscape transformation. The students have the capability to examine the strengths, weaknesses, opportunities and threats (SWOT) of transformation concepts and results. They are able to sum up their results in an expert’s report.

Contents:
TransLab I comprises a learning and working process starting with a profound and comprehensive analysis of urban landscape transformation in a selected urban laboratory and coming out with an expert’s report as a typical product of consultancy and evaluation business. In this respect TransLab I simulates one of the students’ possible future fields of work.

The analysis resumes the modified multi-dimensional approach to landscape perception as well as the analytical frame for the analysis of urban and regional governance taught in the previous semester. Research methods based on skills acquired in ACOMAP are applied. The students learn to select appropriate methods taught in the 1st term according to a theoretically embedded research question and the conditions of the specific lab. One important tool will be a SWOT-analysis.

Proofs of academic achievement: Written final report, at least 60%

This course is credited for “Optionalbereich“.
170201 Transformation Laboratory II "From Analysis to Communication" (TransLab II)

Language: English

Department: Geographisches Institut

Contact: Prof. Dr. Matthias Kiese, Tel. 23436, Dr. Stefanie Heinze, Tel. 23661

Degree programme: International Double-Degree Master Program “Transformation of Urban Landscapes”

Module: 170201 Transformation Laboratory II "From Analysis to Communication" (TransLab II)
Module taught entirely in English.

Course type: Seminar

Credit Points: 10

Teacher/Lecturer: Prof. Dr. M. Kiese, Dr. S. Heinze

Requirements: Bachelor Degree in Geography, Bachelor Degree in Spatial Planning

Room
NA 4/175 & NA 7/130

Day, Time
Wednesday, 08.00 – 12.00

Begin

Course description:

Learning outcome:
The students are able to analyse conditions, strategies, concepts, processes and outcomes of urban landscape transformation in a multi-dimensional and multi-perspective way based on interdisciplinary approaches in a team. They have tested and expanded their analytical know-how in a laboratory of landscape transformation. The students have the capability to examine the strengths, weaknesses, opportunities and threats (SWOT) of transformation concepts and results. They are able to present, communicate and discuss their research results in the framework of self-organized workshops or exhibitions. In such a way the students become “agents of transformation” passing on their just acquired transformation competence to the public.

Contents:
TransLab II comprises a learning and working process starting like in TransLab I with a profound and comprehensive analysis of urban landscape transformation in a selected urban laboratory, but coming out with a self-organized workshop or exhibition setting the framework for the presentation of research results and for a discussion with the public and experts. By training competences in knowledge-management and -transfer, in presentation and communication TransLab II promotes soft skills essential for every future field of work.

The analysis resumes the modified multi-dimensional approach to landscape perception as well as the analytical frame for the analysis of urban and regional governance taught in the 1st term. It applies different research methods based on skills acquired in ACOMAP. The students learn to select appropriate methods according to a theoretically embedded research question and the conditions of the specific Lab. One important tool will be a SWOT-analysis.

Proofs of academic achievement: Written final report, at least 60%

This course is credited for „Optionalbereich“.
FACULTY OF HISTORY

National Historiographies in Global Historical Perspective

Language: English

Department: Institute for Social Movements
Contact: Stefan Berger, stefan.berger@rub.de
Degree programme: N/A
Module: National Historiographies in Global Historical Perspective
Module taught entirely in English.
Course type: Lecture
Credit Points: 1
Teacher/Lecturer: Prof. Dr. Stefan Berger
Requirements: None

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<td>TBA</td>
<td>Tuesday, 10 - 12</td>
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Course description:
This lecture course will compare the development of national history writing across five continents focussing on the modern period. It will ask about the institutional settings in which history writing took place and investigate the communities and networks that shaped national historiographies. It will also examine the relationship of national history writing with other spatial and non-spatial forms of history writing, including histories of ethnicity/race, class, religion and gender as well as local/regional and transnational history writing, i.e. imperial, continental and global/universal history writing. The role of borders and borderlands in historical writing will be examined as it was often at the border that national history writing was at its most intense. Overall, this course will introduce students to the comparative history of historiography in relation to one of the most powerful forms of history writing – national history.

Proofs of academic achievement: Attendance

This course is open for refugees taking part in preparatory courses.
Writing National Histories – a European Comparison

Department: Institute for Social Movements
Contact: Stefan Berger, stefan.berger@rub.de
Degree programme: N/A
Module: Writing National Histories – a European Comparison
Module taught entirely in English.
Course type: Seminar
Credit Points: 6
Teacher/Lecturer: Prof. Dr. Stefan Berger
Requirements: 3rd year BA minimum

Room  Day, Time  Begin
TBA      Tuesday, 14 - 16  12/04/2016

Course description:
This seminar will explore the career of national history writing in Europe focusing on the modern period from 1750 to the present day. It will ask about the making of a profession and its interrelationship with nationalism. Why is it that national history writing dominated the field of history writing virtually everywhere in Europe throughout much of the nineteenth and twentieth centuries? How were national narratives constructed? How contested were they? And what was the relationship between national historical narratives and political ambitions and movements? What role did states play in promoting national historiographies? And how could historians square their ideal of ‘objectivity’ with the partisanship towards ‘their’ respective nations? The seminar will encourage students to engage with different forms of history writing both in the past and the present and to treat historical writing as one form as constructing the past.

Proofs of academic achievement: Coursework, 6000 words

This course is open for refugees taking part in preparatory courses.
A Taste of US Law School

Department: Fakultät Rechtswissenschaften RUB
Contact: Lehrstuhl Prof. Riesenhuber, euwirtr@rub.de
Degree programme: Staatsexamen Rechtswissenschaften
Module: A Taste of US Law School
Module taught entirely in English.
Course type: Lecture
Credit Points: Degree according to US points system
Teacher/Lecturer: Prof. Clayton Gillette
Requirements: Intermediate examination

Room
Blue Square 05

Day, Time
Mo-Fr 09h / Sa written exam

Begin
17 May – 21 May 2016

Course description:
Studiengang Staatsexamen Rechtswissenschaften, Zulassungsvoraussetzung: intermediate examination, individual merit-based admission through the Dean’s Office.

Proofs of academic achievement: Written Examination on Saturday 21st May
This course is credited for „Optionalbereich“.

International Legal Dialogue

Department: Lehrstuhl für Prozessrecht und Bürgerliches Recht, Prof. Dr. Peter A. Windel
Contact: Fabian Schumann, 0234/32-25243, zpo@rub.de
Degree programme: Bachelor/Master/State Examination
Module: International Legal Dialogue
Module is not taught entirely in English.
Course type: Colloquium/Seminar
Credit Points: 3 for colloquium/9 for own presentation
Teacher/Lecturer: Prof. Dr. Peter A. Windel, Attorney at Law Mark McMillian, J.D.
Requirements: Knowledge and skills in either German or at least one foreign law
Course description:
Students will discuss about legal questions that go along with globalization. In the context of a moderated colloquium presentations of foreign visiting lecturers and Student Video Conferences with foreign partner faculties will be integrated.

Proofs of academic achievement: Possibility of own presentation
This course is open for refugees taking part in preparatory courses.

Introduction to American Law (Wednesday)

Language: English

Department: Faculty of Law
Contact: Dr. Judit Beke-Martos, LL.M., Judit.Beke-Martos@rub.de, 0234 32 27681
Degree programme: N/A
Module taught entirely in English.
Course type: Lecture
Credit Points: 3 CP (5 ECTS)
Teacher/Lecturer: Dr. Judit Beke-Martos, LL.M.
Requirements: Proficient English

Course description:
This course in a basic introduction to the law and legal system of the United States in English. It covers the basic characteristics of the common law system, the doctrine of stare decisis, sources of law in the United States, the U.S. court system (both state and federal), the jury system, parties to a lawsuit, basics of the adversary system of trial, pleadings and motions, pretrial discovery, the trial process, case briefs and citations.

The course is though a lecture, some participation is expected.

Proofs of academic achievement: Written exam
This course is credited for „Optionalbereich“. 
Introduction to American Law (Thursday)

Language: English

Department: Faculty of Law
Contact: Dr. Judit Beke-Martos, LL.M., Judit.Beke-Martos@rub.de, 0234 32 27681
Degree programme: N/A
Module taught entirely in English.
Course type: Lecture
Credit Points: 3 CP (5 ECTS)
Teacher/Lecturer: Dr. Judit Beke-Martos, LL.M.
Requirements: Proficient English

Room: HGC 10
Day, Time: Thursday, 10:00 to 12:00
Begin: 21/04/2016

Course description:
This course is a basic introduction to the law and legal system of the United States in English. It covers the basic characteristics of the common law system, the doctrine of stare decisis, sources of law in the United States, the U.S. court system (both state and federal), the jury system, parties to a lawsuit, basics of the adversary system of trial, pleadings and motions, pretrial discovery, the trial process, case briefs and citations.

The course is though a lecture, some participation is expected.

Proofs of academic achievement: Written exam

This course is credited for „Optionalbereich“.

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A Brief Introduction to American Law (Block course)

Language: English

Department: Faculty of Law
Contact: Dr. Judit Beke-Martos, LL.M., Judit.Beke-Martos@rub.de, 0234 32 27681
Degree programme: N/A
Module taught entirely in English.
Course type: Lecture
Credit Points: 3 CP (5 ECTS)
Teacher/Lecturer: Dr. Judit Beke-Martos, LL.M.
Requirements: Proficient English
Course description:
This course is a brief introduction to the law and legal system of the United States in English. It covers the sources of law in the United States, the U.S. court system (both state and federal), the jury system, parties to a lawsuit, basics of the adversary system of trial, pleadings and motions, pretrial discovery, the trial process, case briefs and citations.

The course is through a lecture, students are expected to participate and perform certain skill-based exercises.

Reading materials will be provided.

Proofs of academic achievement: Take home exam

This course is credited for “Optionalbereich”.
FACULTY OF MATHEMATICS

Numerical Methods and Stochastics

Language: English

Department: Mathematics
Contact: Dr. Vaidotas Characiejus, 0234 3223423, Vaidotas.Characiejus@rub.de; Prof. Dr. Christian Kreuzer, 0234 3223242, Christian.Kreuzer@rub.de
Degree programme: Master Course Computational Engineering
Module: Numerical Methods and Stochastics
Module taught entirely in English.
Course type: Lecture series
Credit Points: 6
Teacher/Lecturer: Dr. Vaidotas Characiejus and Prof. Dr. Christian Kreuzer
Requirements: Knowledge of Analysis, Numerics and Stochastics on the level of a bachelor in engineering science

Course description:
Numerics:
Two-point boundary value problems, prerequisites for finite element and finite volume methods, efficient solvers for large linear systems of equations, linear and non-linear optimization.
Stochastics:
- Fundamental concepts of probability and statistics: (multivariate) densities, extreme value distributions, descriptive statistics, parameter estimation and testing, confidence intervals, goodness of fit tests.
- Time series analysis: trend and seasonality, ARMA models, spectral density, parameter estimation, prediction.
- Multivariate statistics: correlation, principal component analysis, factor analysis.
- Linear models: multiple linear regression, F-test for linear hypotheses, Analysis of Variance.

Proofs of academic achievement: 2 hours written exam

Computational Fluid Dynamics

Language: English

Department: Mathematics
Contact: Prof. Dr. Rüdiger Verfürth, 0234 32 23247, Ruediger.Verfuerth@rub.de
Degree programme: Master Course Computational Engineering
Module: Computational Fluid Dynamics
Module taught entirely in English.
Course type: Lecture & Exercise
Credit Points: 6

Teacher/Lecturer: Prof. Dr. R. Verfürth

Requirements: Basic knowledge about: partial differential equations and their variational formulation, finite element methods, numerical methods for the solution of large linear and non-linear systems of equations

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<td>Mon. 11:15-12:45</td>
<td>11/04/2016</td>
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<tr>
<td>NA 02/99</td>
<td>Wed. 15:00-17:00</td>
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Course description:
The class provides an overview of numerical techniques that are used to solve the partial differential equations describing fluid flow problems. The course starts with an introduction of the mathematical models describing the dynamics of incompressible as well as compressible fluid flow problems. It contains detailed discussions of numerical methods for the Poisson problem, the heat equation and the advection equation and shows how these methods can be used as building blocks for numerical algorithms in CFD.

Proofs of academic achievement: 2-hour closed book written exam

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Numerical Methods and Scientific Computing

Language: English

Department: Mathematics
Contact: Dr. Mario Lipinski, 0234 322 3246, Mario.Lipinski@rub.de
Degree programme: Master
Module: Numerical Methods and Scientific Computing
Module taught entirely in English.
Course type: Lecture with integrated exercises
Credit Points: 4
Teacher/Lecturer: Dr. Mario Lipinski

Requirements: Basic knowledge in mathematics for engineers or scientists

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<td>HZO 60</td>
<td>Thursday, 12 am-3pm</td>
<td>14th April, 2016</td>
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Course description:
The course is aimed at engineers and scientists.
In the course, basic algorithms of numerical mathematics will be presented.
Exercises will deal with implementing those algorithms in Octave.
The following topics are covered:
- Systems of linear equations (exact solvers, iterative solvers, errors)
- Systems of non-linear equations (Newton’s method)
- Interpolation (Lagrange interpolation, Hermite interpolation, cubic splines)
International seminars and lectures

- Numerical integration (Newton-Cotes formulas, Gauss formulas, Romberg’s method, overview: multidimensional integration)
- Ordinary differential equations (single step methods, Runge-Kutta methods, step size control, overview: multi step methods)
- Ordinary boundary value problems (difference method, finite element method)
- Partial differential equations (difference method, finite element method)
- Eigenvalues / eigenvectors (power method, Rayleigh quotients, inverse methods, QR method)

Proofs of academic achievement: Written examination

Financial Cryptography

Language: English, if required

Department: Mathematics
Contact: Prof. Dr. Sebastian Faust, Sebastian.Faust@gmail.com
Degree programme: Bachelor and Master
Module: Financial Cryptography
Module taught entirely in English.
Course type: Lecture
Credit Points: 4.5
Teacher/Lecturer: Prof. Dr. Sebastian Faust
Requirements: Basic knowledge about cryptography (e.g. from course “Kryptographie I+II”)

Room  Day, Time  Begin
NA 1/64  Thursday, 2 pm – 4 pm  14th April 2016

Course description:
The course considers cryptographic protocols that are used for the digital economy. We will discuss secure payment systems such as the EMV standard, and will give a cryptographic introduction to cryptocurrencies based on the proof of work idea (e.g., the Bitcoin & Litecoin system).
The course will include topics such as:
- eCash & blind signatures
- EMV protocol
- Cryptocurrencies based on Proof of Work (e.g., Bitcoin and Litecoin)
- Alternative mining puzzles & altcoins
- Online auctions
- Broadcast encryption and secure content distribution

The lecture will be held in English if required – if not requested, it will be held in German.

Proofs of academic achievement: Written examination
FACULTY OF PHILOLOGY

ENGLISH DEPARTMENT

www.rub.de/anglistik

Apart from few exceptions all courses offered by the English Department are taught in English.

The different courses cover topics from the fields of American Cultural Studies, British Cultural Studies, American Literature, British Literature and Linguistics.

Courses which could be particularly useful and interesting for exchange students are also provided in the modules Language Practice (i.e. Translation, Communication, Grammar) and English for Special Purposes (i.e. Legal English, Business English, Technical English).

A complete list can be found on the departmental homepage:
http://www.es.rub.de/vorlesungsverzeichnis.html

Contact Information:

Geschäftszimmer GB 6/133
Mon-Fri: 9 am – 1 pm
Phone: 0234/32-22589
Email: anglistik@rub.de
The new unconscious

Language: English

Department: Philosophy II
Contact: Dr. Beate Krickel, +49 (0)234 3224724, beate.krickel@rub.de
Degree programme: Bachelor/Master
Module: BA WM IIa, BA WM IIIa, Master Cognitive Science
Module taught entirely in English.
Course type: Seminar
Credit Points: 4 (or 6)
Teacher/Lecturer: Dr. Beate Krickel
Requirements: none

Room
Day, Time
Begin
GA 03/149
Wednesday, 12:00 – 14:00
13/04/2016

Course description:
Recently, the notion of the unconscious (unconscious mental states or processes) has regained attention in the cognitive and affective sciences. This is an interesting development also from a philosophical perspective. The following questions arise:
In which sense can states/processes that are not conscious be mental?
How does the notion of the unconscious relate to concepts such as "subpersonal", "automatic", "implicit", "unattended"?
Even if it might be unproblematic to speak of unconscious cognitive states (such as unconscious beliefs and desires) - can there be unconscious affective states such as unconscious fears?
Why and when do scientists speak of unconscious mental states/processes? Which explanatory role do these notions have?
How does the recent debate connect to historical works such as Freud's theory of the unconscious?
The seminar is planned as a research seminar in which students are expected to discuss and analyze papers from different disciplines in small groups. At the end of the course, students are supposed to present their research.
IMPORTANT: Please make sure to attend the first session where the groups will be formed.

Proofs of academic achievement: To be discussed in the seminar
Theories of Self-Consciousness

Department: Philosophy II
Contact: Prof. Dr. Albert Newen, phone +49 (0)234 3222139, albert.newen@rub.de
Degree programme: Master
Module: MA WM IIa, MA WM IIIa, M.ed. WM IIIa, Master Cognitive Science
Module taught entirely in English.
Course type: Seminar
Credit Points: 4 (or 6)
Teacher/Lecturer: Prof. Dr. Albert Newen
Requirements: Bachelors Degree in philosophy, linguistics, psychology, and cognitive neurosciences

Room
UFO 0/02

Day, Time
Tuesday, 10:00 – 12:00

Begin
12/04/2016

Course description:
This seminar is a research-oriented seminar which especially enables the participants to develop a project which leads into a BA-thesis or a master-thesis. It has a focus in philosophy but will involve some psychological texts as well. The main topic is the discussion of modern theories of human self-consciousness. Self-consciousness can be defined as the ability to consciously represent one's own states, especially (but not only) mental states, as one's own (Newen, Vogeley 2003).

Further Information: http://www.ruhr-uni-bochum.de/philosophy/akt_studium.html.de

Proofs of academic achievement: Oral representation and essay writing

Nature of Pain and Emotion: Investigation from the Perspective of Philosophy and cognitive Sciences

Department: Philosophy II
Contact: Prof. Dr. Albert Newen, phone +49 (0)234 3222139, albert.newen@rub.de
Degree programme: Master
Module: MA WM IIIc, M. Ed. WM IIIc, PhD Program
Module taught entirely in English.
Course type: Seminar
Credit Points: 6
Teacher/Lecturer: Prof. Dr. Albert Newen
International seminars and lectures

Requirements: Bachelors Degree in philosophy, linguistics, psychology, and cognitive neurosciences

Room
GABF 05/703

Day, Time
Thursday, 10:00 – 12:00

Begin
14/04/2016

Course description:
In the first part of the seminar, we will discuss the main modern theories of emotion and then we will investigate recent philosophical theories of pain. In both parts we will mainly read philosophical texts but also some texts from cognitive psychology and neurosciences are included. Although there is still a vivid debate about the philosophy of emotion, there is already some agreement while this is completely lacking in the case of philosophical theories of pain.

Further information: http://www.ruhr-uni-bochum.de/philosophy/akt_studium.html.de

Proofs of academic achievement: Oral presentation and essay writing

Self and Other. Exploring Subjectivity, Empathy and Shame

Language: English

Department: Philosophy II

Contact: Prof. Dr. Tobias Schlicht, phone +49 (0)234 3229479, tobias.schlicht@rub.de

Degree programme: Master

Module: BA WM IIa, MA WM IIIa, M.Ed. WM IIIa, Master Cognitive Science, Master Psychology
Module taught entirely in English.

Course type: Seminar

Credit Points: 4 (or 6)

Teacher/Lecturer: Prof. Dr. Tobias Schlicht

Requirements: Bachelors Degree in philosophy, linguistics, psychology, and cognitive neurosciences

Room
GA 03/46

Day, Time
Tuesday, 10:00 – 12:00

Begin
12/04/2014

Course description:
In this seminar, we will read and discuss Dan Zahavi’s latest book Self and Other. Exploring subjectivity, empathy and shame (Oxford: Oxford University Press 2013). It covers the debate between the nature of subjectivity (of consciousness and selfconsciousness, say) and empathy or social cognition and their relation.

The exciting bit of the seminar is that it involves a workshop with Prof. Dan Zahavi from June 20th - 22nd (at Beckmannshof on Campus). Zahavi will give four talks based on the book. In addition, based on an international call for papers, Master- or PhD students will present critical commentaries on this work. This call is of course also open to the Master students.
Reading:

Proofs of academic achievement: Will be discussed in the seminar
This course is open for refugees taking part in preparatory courses.

John Searle, Seeing things as they are

Language: English

Department: Philosophy II
Contact: Prof. Dr. Tobias Schlicht, phone +49 (0)234 3229479, tobias.schlicht@rub.de
Degree programme: Master
Module: BA WM IIa, MA WM IIIa, M.Ed. WM IIIa, Master Cognitive Science, Master Psychology
Module taught entirely in English.
Course type: N/A
Credit Points: 4 (or 6)
Teacher/Lecturer: Prof. Dr. Tobias Schlicht
Requirements: Bachelors Degree in philosophy, linguistics, psychology, and cognitive neurosciences

Room  
GA 3/143  
Day, Time  
Monday, 12:00 – 14:00  
Begin  
11/04/2016

Course description:
In this seminar we will read and discuss John Searle’s latest book on perception. Searle’s writings are in general very accessible also to non-philosophers because of his clear language and way of distinguishing and elaborating terms, problems and solutions. The seminar is addressed at beginners as well as advanced students. The exciting bit of the seminar is that it involves a workshop with Prof. John Searle in the spring holiday week, from May 17th -19th (at Beckmannshof on Campus). Searle himself will give four talks on the topic based on his book and based on an international call for papers, additional Master- or PhD students will present critical commentaries on his work. This call is of course also open to the Master students.
Reading:

Proofs of academic achievement: Will be discussed in the seminar
This course is open for refugees taking part in preparatory courses.
Colloquium on Consciousness and Cogniton

Language: English

Department: Philosophy II

Contact: Prof. Dr. Tobias Schlicht, phone +49 (0)234 3229479, tobias.schlicht@rub.de

Degree programme: PhD Program, Master Cognitive Science

Module taught entirely in English.

Course type: Colloquium

Credit Points: 2

Teacher/Lecturer: Prof. Dr. Tobias Schlicht

Requirements: Bachelors Degree in philosophy, linguistics, psychology, and cognitive neurosciences

Room
GA 3/143

Day, Time
Tuesday, 12:00 – 14:00

Begin
12/04/2016

Course description:
In this colloquium, we will study new work on these topics and discuss with guests. Credits can be acquired by way of a longer essay on a topic related to the colloquium.

Proofs of academic achievement: will be discussed in the seminar

This course is open for refugees taking part in preparatory courses.
FACULTY OF PSYCHOLOGY

INSTITUE OF COGNITIVE NEUROSCIENCE, BIOPSYCHOLOGY

Biopsychology Research Colloquium - 118914

Language: English

Department: Faculty of Psychology, Institute of Cognitive Neuroscience (ICN), Dept. Biopsychology

Contact: Prof. Güntürkün, Kontakt: Sekretariat Biopsychologie: 0234/32-28213; biopsychologie@rub.de


Module: Ergänzendes Lehrangebot
Module taught entirely in English.

Course type: Seminar

Credit Points: zero

Teacher/Lecturer: Prof. Dr. Drs. h.c. Onur Güntürkün

Requirements: N/A

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<th>Course description:</th>
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<tr>
<td>GAFO 05/425</td>
<td>Monday, 1-3pm</td>
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<td>The research colloquium is open to all employees and graduate students of the Biopsychology department. The Aim is to present and discuss their research. In addition external guests are invited to give talks on different aspects of biopsychology. You can have a look at the schedule at the department’s information board and our homepage: <a href="http://www.bio.psy.rub.de/">http://www.bio.psy.rub.de/</a></td>
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Proofs of academic achievement: no examination
FACULTY OF SOCIAL SCIENCE

Alternative medicine in Sub-Saharan African Context - anthropological approaches

Language: English

Department: Faculty of Social Science
Contact: international-services@sowi.rub.de, +49 (0) 234-22966
Degree programme: Bachelor
Module: Social and cultural anthropology, social anthropology
Module is not taught entirely in English.
Course type: Seminar
Credit Points: 3/5
Teacher/Lecturer: Médard Djatou
Requirements: Fundamental knowledge from the field of social anthropology recommended.
Registration via Campus Office.

Room
GCFW 04/304

Day, Time
Thursday 12.00-14.00

Begin
14/04/2016

Course description:
There will be comparisons between the African and Western concept of health, healing methods and institutional access to health. Students need to be prepared to work on an ethnological basis.

Proofs of academic achievement: term paper, presentation

Ethics of Immigration

Language: English

Department: Faculty of Social Science
Contact: international-services@sowi.rub.de, +49 (0) 234 32-22966
Degree programme: Bachelor/Master
Module: International Structures and Processes
Module is not taught entirely in English.
Course type: Seminar
Credit Points: 3/5/6
Teacher/Lecturer: Prof. Dr. Volker Heins
Requirements: Registration via Campus Office.

Room
GCFW 04/703

Day, Time
Thursday 16.00-20.00 (biweekly)

Begin
14/04/2016
Course description:
Since the end of the 1970s the normative discussion about the rights and duties associated with immigration has intensified. Initially this discussion concentrated on modes of incorporating migrants, in particular, temporary migrant or "guest" workers, who were already staying in a host country. It was asked whether or not it was right to withhold citizenship or particular social rights. However, against the backdrop of the discussion on John Rawls the focus was soon to be extended considerably. This course will explore key texts in political theory on the politics and ethics of migration. Who may, and under what conditions, be allowed in or turned away by sovereign states? Do state borders and border controls have an intrinsic value or can they be justified instrumentally in view of other normative goals? These questions are, among others, not only theoretically important; they are also at the center of current political and social controversies. To answer them, it is necessary to find out, for example, whether the strength and the limits of the right to freedom of movement depend on the reasons for migration or on the conditions for its realization in particular societies. The aim of the course is, thus, to analyze political, social, and economic contexts of migration and their normative meaning.

Proofs of academic achievement: Active participation, one essay, one in-class exam

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Empirical Labor Market Research

Language: English

Department: Faculty of Social Science
Contact: international-services@sowi.rub.de, +49 (0) 234-22966
Degree programme: Bachelor
Module: Empirical Module
Module is not taught entirely in English
Course type: Seminar
Credit Points: 8
Teacher/Lecturer: Jan Marvin Garbuszus
Requirements: Fundemental knowledge in social economics and social-scientific statistics is required. This is a two-semester course. Therefore, it is only possible to participate, if the student will be taking part in the second part of the course as well, which will be take place in winter semester 2016/17.

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<td>GCFW 05/506</td>
<td>Tuesday 12.00-14.00</td>
<td>12/04/2016</td>
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Course description:
During the two-part seminar students will learn the basics and current developments of labor market research. This includes recent findings that define our view of the labor market e.g. growing labor market participation in old age, the gender-wage gap and rising long-term unemployment. German Socio-economic Panel (GSOEP) for quantitative analysis. This will provide a profound working experience at the intersection of socioeconomics and empirical social science. The seminar will focus on empirical testing of labor market theories (from descriptive statistics to
regression based analysis). Students will gain the required skill set to use quantitative data and statistical software to write an empirical seminar paper. The seminar will continue in the upcoming winter term. Course language (written and spoken) is English.

Proofs of academic achievement: Active participation and independent evaluation, presentation of intermediate results, term paper at the end of the second course in winter semester 2016/17

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International Masculinity Studies

Language: English

Department: Faculty of Social Science
Contact: international-services@sowi.rub.de, +49 (0) 234-22966
Degree programme: Master
Module: Theories of Social Science, Culture and Gender, Gender and Society
Module is not taught entirely in English.
Course type: Seminar
Credit Points: 3/6
Teacher/Lecturer: Maximiliane Brand
Requirements: Solid language skills and the willingness to read, talk and discuss in English.

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<td>GCFW 04/703</td>
<td>Tuesday, 12.00-14.00</td>
<td>12/04/2016</td>
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Course description:
The main focus of interest in this seminar will be on Raewyn Connell's aforementioned book Masculinities, in which she developed and deepened her concept of hegemonic masculinity. Besides an intensive study of the theory itself, we will examine the genesis and development of her work and its influence on the establishment of international masculinity studies as an interdisciplinary field of research in academia. We will discuss the reception of the text with regard to applicability and advancements of the theory as well as criticism of it. On the basis of Connell's theoretical framework we will be able to read and discuss other texts of international masculinity studies. The goal is to get a general overview of the main ideas and works within the field. Above all the seminar should serve to give the students the opportunity to intensively work with one of the most important theoretical works on masculinities.

Proofs of academic achievement: "Studiennachweis": Active Participation (working groups), oral presentation, book review. "Modulprüfung": Active Participation (working groups), oral presentation, book review, final paper. The form of presentation will be discussed in the first session of the seminar.
Labour Mobility: An Economic Perspective

Language: English

Department: Faculty of Social Science

Contact: international-services@sowi.rub.de, +49 (0) 234-22966

Degree programme: Master

Module: Regulation of Work and Participation, Region and Development, Internationalisation and Transnationalisation, Central Issues and Problems of Social Scientific Education

Module is not taught entirely in English.

Course type: Seminar

Credit Points: 3/6

Teacher/Lecturer: Prof. Dr. Martin Werding

Requirements: A successfully completed Bachelors’ degree is required. Participants should be prepared to contribute actively to the discussions, usually by making a presentation and possibly by writing a seminar paper. Topics will be allocated to students in the first session. Registration via CampusOffice starting 29/02/2016.

Course description:
Labour mobility is an issue of continued high-level interest among researchers in different disciplines as well as among the greater public. Economic consequences of labour migration often play a major role in public discussions, but they are not always perceived in line with current economic wisdom and assessed in a balanced fashion. The course will introduce to up-to-date analyses of possible economic effects of labour mobility, mostly for receiving countries, but also for sending countries. In the light of established pros and cons, migration policies such as the intra-EU "free-mobility" regime or more selective approaches to admitting immigrants will also be discussed. The first three sessions will be devoted to an introductory lecture. Afterwards, a series of relevant topics will be presented and discussed among all participants.

Proofs of academic achievement: A certificate for active participation ("Studienachweis") can be obtained based on regular, active contributions, usually by making a presentation (with a handout for other participants). For a graded certificate ("Leistungsnachweis"), writing a seminar paper ("Hausarbeit") is required in addition. Seminar papers typically provide an in-depth discussion of topics covered in the presentation. As a rule, they should be submitted until the term officially ends (on September 30).
Urban Protest cultures in the global South

Language: English

Department: Faculty of Social Science
Contact: international-services@sowi.rub.de, +49 (0) 234-22966
Degree programme: Master
Module: Region and Development, Internationalisation and Transnationalisation
Module taught entirely in English.
Course type: Seminar
Credit Points: 3/6
Teacher/Lecturer: Dr. Sandrine Gukelberger
Requirements: Registration via Campus Office starting 29/02/2016.

Course description:
Protests in the so-called Global South are all too common and usually concern austerity plans, service delivery, housing, wages, and transportation. Various forms of protest and activism demand a sustainable city as an equitable, just city, in which the needs of all citizens are met. This seminar explores how urban protests intersect with poverty, food security, violence and so forth in cultural specific ways, and how this challenge is taken up in urban planning. The aim of this seminar is to engage urban theory and social movement theory with concrete examples from protests in cities in the Global South.

Proofs of academic achievement:
“Studiennachweis” (certificate of active participation): active and regular participation, reading of the obligatory literature, discussion about the texts, presentations and elaborations. “Modulprüfung” (graded certificate): additional term paper.

Conviviality and Belonging

Language: English

Contact: international-services@sowi.rub.de, +49 (0) 234-22966
Degree programme: Master
Module: Internationalisation and Transnationalisation, Central Issues and Problems of Social Scientific Education
Module taught entirely in English.
Course type: Seminar
Credit Points: 3/6
Teacher/Lecturer: Prof. Dr. Eva Gerharz
Requirements: Registration via Campus Office.

Room Day, Time Begin
GC 03/149 Friday 12.00-14.00 15/04/2016
Course description:
There is much anxiety about (the lack of) social cohesion and conflict in diverse societies, but the actual ways in which people find ways to get along with each other has received marginal attention at best. Whether we concentrate on immigration societies, multiethnic societies with a high conflict potential due to polarization or societal contexts characterized by a high level of mobility, the prospects for and actual practices of conviviality remain central in relation to their potential to ensure peaceful coexistence. This course takes up recent debates on everyday practices of conviviality and focuses on their potential to generate more or less stable arrangements in diverse multicultural settings. Embarking on classical as well as more recent literature on social figurations, social ties, connectivity and inclusion/exclusion, we will try to develop a clearer understanding of how convivial arrangements can be conceptualized and how they produce new constellations of belonging.

Proofs of academic achievement: “Studien nachweis” (certificate of active participation): active and regular participation, oral and written contribution. “Modulprüfung” (graded certificate): active and regular participation, oral and written achievement.

Past and present approaches on the migration and development nexus

Language: English

Department: Faculty of Social Science
Contact: international-services@sowi.rub.de, +49 (0) 234-22966
Degree programme: Master
Module: Internationalisation and Transnationalisation
Module taught entirely in English.
Course type: Seminar
Credit Points: 3/6
Teacher/Lecturer: Dr. Margit Fauser
Requirements: A successfully completed B.A. degree in Social Science or a related discipline is required.

Course description:
Migration is generally regarded a result of uneven or unequal development, wage differentials and socio-economic inequalities between countries, regions and people. Whereas more optimistic accounts on the development impact of migration, return and remittances predominated in the 1950 and 1960, world system and dependency theories formulated stronger scepticism and a more critical stance towards the potentials of migration to overcome under-development. Today again, public debate and empirical studies often articulate positive evaluations of the linkages and potentials. Migration is increasingly being viewed as a solution to under-development by transfer of money, knowledge and ideas, and as a livelihood strategy contributing to poverty alleviation. It is
the aim of this course to develop a profound understanding of past and present approaches to the migration-development nexus. Earlier and recent theoretical concepts and empirical evidence are discussed, asking what is old, and what is new, and what has changed.

Proofs of academic achievement: Participants will have to prepare one oral input (10 minutes) and one written statement (2 pages) discussing a text's main argument or addressing a particular question (Studienleistung). Those who wish to acquire more credit points (Modulprüfung) will have to write two shorter term papers (6-8 pages) or one longer term paper (15-18 pages). Final term papers are due on 30 September 2016.

TTIP, CETA and Co: negotiation and contention of transnational free trade agreements

Language: English

Department: Faculty of Social Science
Contact: international-services@sowi.rub.de, +49 (0) 234-22966
Degree programme: Master
Module: Internationalisation and Transnationalisation, Central Issues and Problems of Social Scientific Education, Interest Intermediation
Module taught entirely in English.
Course type: Seminar
Credit Points: 3/6
Teacher/Lecturer: Prof. Sabrina Zajak
Requirements: The seminar will be conducted in English. The seminar is confined to 35 students. Registration Via CampusOffice starting 29.02.2016.

Room        Day, Time        Begin
GC 03/46    Tuesday 16.00-18.00  12/04/2016

Course description:
The negotiations of the Transatlantic Trade and Investment Partnership (TTIP) have triggered one of the biggest protest events in Germany in many years. This seminar looks into the content of the debate, actors and processes of negotiations, as well as its counter mobilization. It pays particular attention in how far the negotiations reconfigure trade policy in the EU, which is known for being the most undemocratic policy field within the European Union due to the lack of transparency of behind closed doors negotiations. But the seminar also goes beyond the individual case of the EU-US negotiations and gives an overview on the development of trade negotiations in Europe (including with countries such as China, South Korea, or South Africa) and the attempts of different non-state actors (business, trade unions, social movements) to impact these negotiations. Following questions will be discussed: How did the trade policy field in Europe evolve? In how far did it democratize? What are the strategies and contents in past and ongoing trade negotiations? How are issues of trade, labor, and sustainability linked? What kind of actors try to impact the negotiations
and how? How can we explain the differences in the impact of non-state actors on bilateral negotiations?

**Proofs of academic achievement:** Certificate of active participation ("Studiennachweis")/graded certificate ("Leistungsnachweis"): Active participation in group work, oral presentation, and final paper.

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**Gendering Family Politics and Policies in Europe**

*Language:* English

*Department:* Faculty of Social Science

*Contact:* international-services@sowi.rub.de, +49 (0) 234-22966

*Degree programme:* Master

*Module:* Culture and Gender, Gender and Society

Module is not taught entirely in English.

*Course type:* Seminar

*Credit Points:* 3/6

*Teacher/Lecturer:* Prof. Dr. rer. soc. Heike Kahlert, Prof. Dorottya Szikra

*Requirements:* A successfully completed B.A. degree in Social Science or a related discipline is required.

**Room**  
GBCF 05/606  
GC 03/42  
GC 03/42

**Day, Time**  
Monday 14.15-15.45  
Thursday 09.00-18.00  
Friday 09.00-18.00

**Begin**  
25/04/2016  
16/06/2016  
17/06/2016

*Course description:*

The family is currently a controversial topic not only within the European Context. Familial and gender relations are changing under conditions of individualism, neoliberalism and globalisation. While demographic trends seem to suggest that family structures and attitudes within Europe are converging and that European states are facing similar social problems, their policy responses are very different. In this seminar, we will examine the differences between these national responses with a special focus on gender. We will also analyse the key concepts underlying the formulation of family policy and illustrate it with recent developments in different European states, e.g. Sweden, UK, Germany and Hungary.

**Proofs of academic achievement:** "Studiennachweis" (certificate of active participation): Active Participation (working groups), oral presentation, short essay. "Modulprüfung" (graded certificate): Active Participation (working groups), oral presentation, short essay, final paper.
Causal Inference

Language: English

Department: Faculty of Social Science
Contact: international-services@sowi.rub.de, +49 (0) 234-22966

Degree programme: Master

Module: Methodological Aspects of Social Scientific Data Analysis
Module is not taught entirely in English.

Course type: Seminar

Credit Points: 3/6

Teacher/Lecturer: Sebastian Beil

Requirements: Participants should have a good understanding of descriptive and inferential statistics and some working knowledge of regression analysis.

Room
To be announced

Day, Time
To be announced

Begin
To be announced

Course description:
The course will enable participants to think more clearly about causal relationships and ways to approach these using specific quantitative methods. We will start by discussing the concept of causality as it is commonly understood in the social sciences. We then introduce the potential outcomes framework and graphical representations of causal relationships. These models are the benchmark against which standard regression models and matching estimators will be evaluated. Throughout the course we will work with the statistical software Stata.

Proofs of academic achievement: "Modulprüfung" (graded certificate): 1. active participation, 2. online tests and 3. written summary and presentation of an academic paper applying matching methods. "Studiennachweis" (certificate of active participation): 1. active participation and 2. online tests.
FACULTY OF SPORT

Sports in the Canadian Media Space

Language: English

Department: Faculty of Sport Science,
Contact: Prof. Dr. Marie-Luise Klein, 0234-3228091, marie-luise.klein@rub.de
Degree programme: Bachelor of Science / Bachelor of Arts / Optionalbereich
Module: Sport and Society
Module taught entirely in English.
Course type: Compact Seminar
Credit Points: 3
Teacher/Lecturer: Dr. Michael Heine
Requirements: -

Room
SW, SR 3
Day, Time
Friday/Saturday 09.00-17.00 -
Sunday 09.00-14.00
Begin
15/04/ + 16/04/2016
17/04/2016

Course description:
Starting from a brief overview of the Canadian sports system, this course investigates the connection between the Canadian professional sports system and the Canadian (and North American) corporate media production space. We will specifically investigate media representation of gender (femininity / masculinity); race (or, 'race') and ethnic identity; and ultimately, Canadian identity - what kinds of stories do sports media tell about the importance of race, ethnicity, gender, and so forth? What is the narrative importance of those stories in the popular culture of sports? Several 'mini case examples' drawn from Canadian sports media will be used to investigate these questions.

Proofs of academic achievement: regular participation

This course is credited for „Optionalbereich“.  

Olympics and Globalization: The Future of the Olympic Event in the Age of the Mega-Spectacle

Language: English

Department: Faculty of Sport Science
Contact: Prof. Dr. Marie-Luise Klein, 0234-3228091, marie-luise.klein@rub.de
Degree programme: Master of Science
Module: Optional studies
Module taught entirely in English.
Course type: Compact Seminar
Credit Points: 3
Teacher/Lecturer: Dr. Michael Heine
Requirements:

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<td>Friday/ and Saturday 09.00-17.00 - Sunday 09.00-14.00</td>
<td>22/04/2016-24/04/2016</td>
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Course description:
The Olympic Games are one of the largest cultural and sporting events on the planet. As mega-spectacle, the Games occupy an important position in the production of narratives that shape and sustain our taken-for-granted understandings of ‘normal’ sports participation. Drawing on Stuart Hall’s analytical notion of ‘representation’, we will investigate the effects of some of the major narrative elements of the global stories of sport which the Olympics and the IOC insinuate into our lives.

(language of instruction: English)

Proofs of academic achievement: regular participation

This course is credited for „Optionalbereich“.

This course is open for refugees taking part in preparatory courses.
Biogenesis of cell organelles

Language: English

Department: Inst. Biochemistry and Pathochemistry/ Systems Biochemistry
Contact: Prof. Dr. Ralf Erdmann, 0234-32-28938, ralf.erdmann@rub.de
Degree programme: Master of Science Biochemistry
Module: Advanced Practical in the Focal Point Programme: “Molecular Medicine
Module taught entirely in English.
Course type: compact course
Credit Points: 7.5 (of 15)
Teacher/Lecturer: Prof. Dr. Ralf Erdmann
Requirements: A five-week all-day practical lab course with a compulsory seminar presentation. Please note: A second Advanced Practical will have to be performed in the same semester to earn the full complement of 15 credits
Room: MA 4/ 142
Day, Time: On demand
Begin: On demand

Course description:
After completion of the course, students will have acquired basic practical skills in biochemical, microbiological and molecular biological methods. The students will be able to cultivate pro- and eucaryotic cells, to isolate protein-complexes by affinity chromatography and to characterize these complexes according to their size (size-exclusion chromatography) and constituents (SDS-PAGE, immuno-blotting). Students will learn how state-of-the-art molecular cell biological methods are used to tackle the structure and function of cellular nanomachines. Presentation skills will be improved by learning how to present scientific data in talks and scientific discussions as well as in a written thesis.

Proofs of academic achievement: Assessment of experimental skills during the practical (50%), a written project report (40%), and a seminar presentation of experimental results (10%).

Characterization of proteins isolated from peroxisomes and peroxisomal membranes of the yeast Saccharomyces cerevisiae

Language: English

Department: Biochemistry and Pathobiochemistry/ Systems Biochemistry
Contact: Prof. Dr. Ralf Erdmann, 0234-32-28939, ralf.erdmann@rub.de
Degree programme: Master of Science Biochemistry
Module: Modular Advanced Practical and Seminar in the Focal Point Programme "Molecular Medicine"
Module taught entirely in English.
Course type: compact course
Credit Points: 3
Teacher/Lecturer: Prof. Dr. Ralf Erdmann

Requirements: Two weeks advanced laboratory course with an integrated seminar

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Course description:
After completion of the course, students will have acquired basic practical skills in biochemical, microbiological and molecular biological methods. The students will be able to isolate protein-complexes by affinity chromatography and to characterize these complexes according to their size (size-exclusion chromatography) and constituents (SDS-PAGE, immuno-blotting). Students will learn how state-of-the-art molecular cell biological methods are used to tackle the structure and function of cellular nanomachines with the peroxisomal protein translocation apparatus as an example. Presentation skills will be improved by learning how to present scientific data in talks and scientific discussions.

Proofs of academic achievement: Assessment of active and successful participation in the practical (50%) and a written project report (50%)

This course is credited for „Optionalbereich“. 

Actuelle issues and methods of molecular Cellbiology

Language: English

Department: Biochemistry and Pathochemistry/ Systems Biochemistry
Contact: Prof. Dr. Ralf Erdmann, 0234-32-28938, ralf.erdmann@rub.de
Degree programme: Bachelor/ Master/ PhD
Module: Journals Club
Module taught entirely in English.
Course type: Lecture
Credit Points: 1
Teacher/Lecturer: Prof. Dr. Ralf Erdmann
Requirements: ...

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<th>Room</th>
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<tbody>
<tr>
<td>MA 4/ 139</td>
<td>Friday 15: - 15:45h</td>
<td>biweekly</td>
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Course description:
Presentation and discussion in English language

Proofs of academic achievement: no

This course is credited for „Optionalbereich“. 
INSTITUTE OF MEDIA SCIENCES

World Cinema: The contemporary audiovisual and its globalised image

Language: English

Department: Professur für Filmwissenschaft mit dem Schwerpunkt Filmtheorie und Filmästhetik
Contact: Prof. Dr. Oliver Fahle, oliver.fahle@rub.de
Degree programme: Bachelor/Master
Module: Geschichte, Theorie und Ästhetik der Kunst und des Films, Vertiefendes Modul
Module taught entirely in English.
Course type: Seminar
Credit Points: 2.5; 3.75; 5
Teacher/Lecturer: Prof. Dr. Felipe Muanis
Requirements: Bachelor of Arts

Room
GABF 04/611
Day, Time
Wednesday 12:00-14:00
Begin
11/04/2016

Course description:

Proofs of academic achievement: Oral examination/Term paper

Metaimage in television and as concept of picture-theory: inserts, TV commercials and videoclips

Language: English

Department: Professur für Filmwissenschaft mit dem Schwerpunkt Filmtheorie und Filmästhetik
Contact: Prof. Dr. Oliver Fahle, oliver.fahle@rub.de
Degree programme: Bachelor/Master
Module: Kulturelles Erbe, Archiv und Geschichte des Kinos, Vertiefendes Modul
Module taught entirely in English.
Course type: Seminar
Credit Points: 2.5; 3.75; 5
Teacher/Lecturer: Prof. Dr. Felipe Muanis
Requirements: - / Bachelor of Arts

Room
GABF 04/611
Day, Time
Monday: 12:00-14:00
Begin
13/04/2016

Course description:
(Link wie oben), p. 60

Proofs of academic achievement: Oral examination, Term paper
Latin America and Europe, audiovisual media and policy in dictatorship regimes

**Language:** English

**Department:** Professur für Filmwissenschaft mit dem Schwerpunkt Filmtheorie und Filmästhetik

**Contact:** Prof. Dr. Oliver Fahle, oliver.fahle@rub.de

**Degree programme:** Bachelor/Master

**Module:** Soziologie, Ökonomie und Technologie des Films und der audiovisuellen Medien, Vertiefendes Modul

Module is not taught entirely in English.

**Course type:** Seminar

**Credit Points:** 2,5; 3,75; 5

**Teacher/Lecturer:** Prof. Dr. Felipe Muanis

**Requirements:** - / Bachelor of Arts

**Room**

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<tr>
<td>GABF 04/611</td>
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<tr>
<td>Friday: 10:00-14:00: 15/04/2016</td>
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<td>15.04., 29.04., 13.05., 03.06., 17.06., 01.07., 15.07.</td>
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**Course description:**

(Link wie oben), p. 60

**Proofs of academic achievement:** Oral examination/ Term paper

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Non-normative bodies in contemporary television series

**Language:** English

**Department:** Professur für Filmwissenschaft mit dem Schwerpunkt Filmtheorie und Filmästhetik

**Contact:** Prof. Dr. Oliver Fahle, oliver.fahle@rub.de

**Degree programme:** Bachelor/Master

**Module:** Visuelle Kultur und Anthropologie des Bildes

Module taught entirely in English.

**Course type:** Seminar

**Credit Points:** 2,5; 5

**Teacher/Lecturer:** Rebecca Kaplan, M.A.

**Requirements:** - / Bachelor of Arts

**Room**

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<td>GA 1/153</td>
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<td>Thursday, 12:15-13:45 15/05/2016</td>
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**Course description:**

(Link wie oben), p. 46

**Proofs of academic achievement:** Oral examination/ Term paper
INSTITUTE OF NEURAL COMPUTATION

Movement generation by Humans and Robots: a dynamical systems perspective

Language: English

Department: Institute for Neural Computation
Contact: PD Dr. Rolf Würtz, 27994, rolf.wuertz@ini.rub.de
Degree programme: Master
Module: Name
Module taught entirely in English.
Course type: Lecture/Tutorial
Credit Points: 6
Teacher/Lecturer: Prof. Dr. Gregor Schöner
Requirements: none

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<tr>
<td>NB 3/57</td>
<td>Thursday, 14.15 – 16.00</td>
<td>14/04/2016 (Lecture)</td>
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<tr>
<td>NB 3/57</td>
<td>Thursday, 16.15 – 17.00</td>
<td>21/04/2016 (Tutorial)</td>
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Course description:
Humans are the dexterous species. We excel at movement generation, in particular at handling objects and generating the complex sequences of actions that achieve goals. This course looks at the fundamental processes of movement generation in humans and other animals and characterizes the special properties of human movement that emerge from the neural foundation. Object-oriented movement generation entails not only the timing and control of movement, but also object perception, scene representation, and the organization and planning of sequences. Movement generation thus cuts across a wide range of neural processes.

We review experimental results in movement science, discuss mathematical models of movement generation, and use robotic instantiations of such models to illustrate their function. The mathematical language that pervades the theoretical work reviewed in the course comes from the theory of dynamical systems. The course includes tutorials on basic concepts in dynamical systems theory. The exercises provide opportunities to use those concepts in a variety of contexts.

Another goal of the course is to expose students to interdisciplinary science. The exercises include readings of review papers in different relevant fields. An essay exercise practices reading and writing at the level of academic research papers.

The course consists of a weekly 2-hour lecture, followed by a 1-hour exercise session. Exercise sheets given out each week must be handed in and individually corrected. They are discussed in the week after they are due. Humans are the dexterous species. We excel at movement generation, in particular at handling objects and generating the complex sequences of actions that achieve goals. This course looks at the fundamental processes of movement generation in humans and other animals and
characterizes the special properties of human movement that emerge from the neural foundation. Object-oriented movement generation entails not only the timing and control of movement, but also object perception, scene representation, and the organization and planning of sequences. Movement generation thus cuts across a wide range of neural processes.

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The course consists of a weekly 2-hour lecture, followed by a 1-hour exercise session. Exercise sheets given out each week must be handed in and individually corrected. They are discussed in the week after they are due.

Proofs of academic achievement: Oral examination

Mathematics for Modeling and Data Analysis

Language: English

Department: Institute for Neural Computation
Contact: PD Dr. Rolf Würtz, 27994, rolf.wuertz@ini.rub.de
Degree programme: Bachelor
Module: Name
Module taught entirely in English.
Course type: Lecture/Tutorial
Credit Points: 6
Teacher/Lecturer: Prof. Dr. Laurenz Wiskott
Requirements: basic knowledge of linear algebra and calculus

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<td>NB 3/57</td>
<td>Thursday, 12.15 – 13.45</td>
<td>14/04/2016 (Lecture)</td>
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<tr>
<td>NB 3/57</td>
<td>Thursday, 9.00 – 12.00</td>
<td>21/04/2016 (Tutorial)</td>
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Course description:
This course covers mathematical methods that are relevant for modeling and data analysis. Particular emphasis will be put on an intuitive understanding as is required for a creative command of mathematics. The following topics will be covered: Functions, vector spaces, matrices as, transformations, systems of linear differential equations, qualitative analysis of nonlinear differential equations, Bayes theory, multiple integrals.

Proofs of academic achievement: Oral examination
Computational Neuroscience: Vision and Memory

Language: English

Department: Institute for Neural Computation
Contact: PD Dr. Rolf Würtz, 27994, rolf.wuertz@ini.rub.de
Degree programme: Master
Module: Name
Module taught entirely in English.
Course type: Lecture/Tutorial
Credit Points: 6
Teacher/Lecturer: Prof. Dr. Laurenz Wiskott
Requirements: good mathematical skills, linear algebra and calculus

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<tr>
<td>NB 3/57</td>
<td>Tuesday, 12.15 – 13.45</td>
<td>12/04/2016 (Lecture)</td>
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<tr>
<td>NB 3/57</td>
<td>Tuesday, 9.00 – 12.00</td>
<td>19/04/2016 (Tutorial)</td>
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Course description:
This lecture presents models of selforganization in neural systems, in particular addressing vision (receptive fields, neural maps, invariances, attention) and associative memory (Hopfield network).

Proofs of academic achievement: Oral examination

Machine Learning: Supervised Methods

Language: English

Department: Institute for Neural Computation
Contact: PD Dr. Rolf Würtz, 27994, rolf.wuertz@ini.rub.de
Degree programme: Master
Module: Name
Module taught entirely in English.
Course type: Lecture/Tutorial
Credit Points: 6
Teacher/Lecturer: Jun.-Prof. Dr. Tobias Glasmachers
Requirements: none

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<th>Room</th>
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<tr>
<td>NB 3/72</td>
<td>Monday, 10.00 – 12.00</td>
<td>11/04/2016 (Lecture)</td>
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<tr>
<td>NB 3/72</td>
<td>Thursday, 12.00 – 14.00</td>
<td>14/04/2016 (Tutorial)</td>
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Course description:
The field of machine learning constitutes a modern approach to artificial intelligence. It is situated in between neuroscience, statistics, robotics, and areas of application ranging all over science and
engineering, medicine, economics, and many more. Machine learning algorithms automate the process of learning, thus allowing prediction and decision making machines to improve with experience.

This lecture will cover different state-of-the-art methods in the domain of "supervised learning". Topics include classical statistical methods, neural networks, support vector machines, and nearest neighbour models. The lecture covers algorithmic as well as learning theoretical aspects.

The 2 hours/week lecture is accompanied by a 2 hours/week practical course. It will be held either in German or in English, depending on the audience. Most of the course material will be in English.

**Proofs of academic achievement:** Oral examination
INTERDISCIPLINARY CENTRE FOR ADVANCED MATERIALS SIMULATION (ICAMS)

Microstructure and mechanical properties

Language: English

Department: Interdisciplinary Centre for Advanced Materials Simulation (ICAMS)
Contact: mss@icams.rub.de, phone: 0234 32 29332
Degree programme: Master
Module: n.s.
Module taught entirely in English.
Course type: Lecture with exercises/seminar
Credit Points: 4
Teacher/Lecturer: Prof. Dr. Alexander Hartmaier

Requirements: Students must have completed the modules “Elements of Microstructure” and “Introduction to Statistical Physics and Thermodynamics” or equivalent.

Room
ICAMS, IC 02/718 and CIP-pool IC 02/522
Day, Time
Monday 14.00-16.30
Begin
18/04/2016

Course description:
In this course students learn the principles of microstructure evolution during materials processing, its dependence on the materials composition and transport processes. They gain understanding of the correlation between microstructure and mechanical properties of materials by learning the microstructural mechanisms of deformation and failure. They develop the skills to apply this knowledge to materials science problems.

Proofs of academic achievement: written examination

This course is credited for „Optionalbereich“.

This course is open for refugees taking part in preparatory courses.

Interfaces and surfaces

Language: English

Department: Interdisciplinary Centre for Advanced Materials Simulation (ICAMS)
Contact: mss@icams.rub.de, phone: 0234 32 29332
Degree programme: Master
Module: n.s.
Module taught entirely in English.
Course type: Lecture, practical exercises

Credit Points: 6

Teacher/Lecturer: Dr. Thomas Hammerschmidt, Dr. Rebecca Janisch, Dr. Jutta Rogal

Requirements: Students must have successfully completed modules “Elements of Microstructure”, “Introduction to Quantum Mechanics in Solid State Physics” and “Assessment and Description of Materials Properties” or equivalent.

Room | Day, Time | Begin
--- | --- | ---
ICAMS, IC 02/718 and CIP-pool IC 02/522 | Monday, 10.15-12.00 | 11/04/2016
Thursday, 12.15-14.00

Course description:
The course shall provide an understanding of the relevance of surfaces and interfaces in materials science. The goals are gaining basic knowledge of experimental and computational techniques to characterize surfaces/interfaces as well as understanding the relationship between atomistic descriptions of interfaces/surfaces and macroscopic materials properties, especially thermodynamic and mechanical properties (interface/surface energies, adsorption, segregation, interface mobility, interaction with other defects). The students will develop the relevant skills to choose the most suited approaches for specific questions and to apply them to material science problems.

Proofs of academic achievement: oral exam

This course is credited for „Optionalbereich“.

This course is open for refugees taking part in preparatory courses.

Quantum mechanics in materials science

Language: English

Department: Interdisciplinary Centre for Advanced Materials Simulation (ICAMS)
Contact: mss@icams.rub.de, phone: 0234 32 29332

Degree programme: Master

Module: n.s.
Module taught entirely in English.

Course type: Lecture and seminar

Credit Points: 4

Teacher/Lecturer: Prof. Dr. Ralf Drautz, Dr. Thomas Hammerschmidt

Requirements: Successful completion of “Introduction to Quantum Mechanics in Solid State Physics” or equivalent.

Room | Day, Time | Begin
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International seminars and lectures

ICAMS, IC 02/718 and CIP-pool IC 02/522

Monday, 8.30-10.00
Thursday, 8.30-10.00

11/04/2016

Course description:
The course shall provide a basic understanding of quantum mechanics in materials science, which enables the students to study the current research literature. Furthermore it provides the required knowledge of quantum mechanics as the basis of performing electronic-structure simulations. The students will learn to understand the basics of wave mechanics and their relation to the electronic structure of materials. Students will be able to transfer this knowledge in order to understand and use numerical methods for calculating the electronic structure of complex phases. They comprehend how the electronic structure influences the properties of materials.

Proofs of academic achievement: written examination

This course is credited for „Optionalbereich“.

This course is open for refugees taking part in preparatory courses.
Published Details

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