International Office
Gebäude Studierenden-Service-Center (SSC)
Universitätsstraße 150
44780 Bochum

Email: rubiss@rub.de
www.international.rub.de/rubiss

INTERNATIONAL COURSE CATALOGUE
WiSe 2015/2016
Degree programmes, seminars and lectures
taught in English and other foreign languages
INTERNATIONAL COURSE CATALOGUE

WiSe 2015/2016

Degree programmes, seminars and lectures taught in English and other foreign languages
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 42,500 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. RUB won two projects in the very competitive German Excellence Initiative in June 2012: the interdisciplinary Research School and the Cluster of Excellence RESOLV (Ruhr Explores Solvation) – Solvents as active units.

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 5,000 international students, approx. 450 international PhD students and several hundred 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 Metropolis Ruhr (UAMR).

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. This is why "RUBiss – international student services" was established at the International Office. You will find contact persons for important issues 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), Niterói, 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 Santo Tomás, Colombia
- National Taiwan University, Taipei, Taiwan
- EWHA Womans University, Seoul, Korea
- Soongsil University, Seoul, Korea
- Sogang University, Seoul, Korea
- 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
- Belorussian 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, 31 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:

<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></td>
</tr>
<tr>
<td>Manhattan, KS</td>
<td>University of Missouri</td>
</tr>
<tr>
<td></td>
<td>Kansas City, MO</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>New South Wales</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:

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
- Belorussian 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 der 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 Lafeyette, Indiana, USA
- Drexel University in Philadelphia, USA

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.markakis@uv.rub.de
Internet: www.international.rub.de/gaststudis

Outgoing Exchange Student Services
International Office
Ruhr-Universität Bochum
Email: anika.odenbach@uv.rub.de
jonna.haensel@uv.rub.de
uta.baier@uv.rub.de
Internet: www.international.rub.de/ausland
RUB 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, “International Women’s Exchange” 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 notable 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 295,28 € (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 course homepage.
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 295,28 € (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 295,28 € (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. For further details on admission requirements please contact the councilor (see contact).

**Fees:** RUB’s social fee 295.28 € (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 295.28 € (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 have a Bachelor’s degree in Computer Science will not be accepted. Very good English language skills, see programme website for further details.

**Fees:** RUB’s social fee 295.28 € (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 295.28 € (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](http://www.gmg.rub.de/studium/studgang)

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**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 295.28 € (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](http://www.chemie.rub.de/studium/master/biochemie)

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**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 295.28 € (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](http://www.chemie.ruhr-uni-bochum.de/studium/master/chemie)

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**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 regular period of study 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 program’s website or contact the program coordinator.

**Fees:** RUB’s social fee 295.28 € (per semester)

**Contact:** Dipl.-Ök. Michèle Lorraine Teufel, tel.: 0234 32-22687 email: econmaster@rub.de

**More information:** [www.rub.de/econmaster](http://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 295,28 € (per semester)
Contact: Dr. Andreas Utsch, Tel.: 0234 / 32-27895, email: andreas.utsch@rub.de.

Ethics – Economics, Law and Politics
Faculty 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 295,28 € (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 obtain the degree of a partner university alongside the RUB-degree.
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. Students spend the first two semesters together 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/
Name: Philip Dorok
Email: Philipp.Dorok@rub.de

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 can obtain a second degree of our partner, the University of the Western Cape (UWC), South Africa.

Contact:
Name: Dr. Gabriele Baecker  
Email: gabriele.baecker@rub.de
Name: Dr. Meik Novak  
Email: Meik.Nowak@rub.de

[www.development-research.org/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 approx. €270 (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
http://www.wiwi.rub.de/international/doubleprogrammes/uea_double.html.en
Double Master in Economics and Finance

Ten students admitted to the MSc in Economics are eligible to apply for this Double Master’s Programme with the Peking University HSBC Business School (PHBS) in Shenzhen, China. Successful Double Masters students are awarded two degrees: MSc in Economics (RUB) and Master in Finance (PHBS). RUB Double Masters students spend their first year at RUB and their second year at PHBS. This programme provides students with intercultural and language competence which will improve their international employability considerably.

Contact:
Name: Prof. Dr. Michael Roos
Email: Michael.Roos@rub.de
Name: Christina Seeger
Email: Christina.Seeger@rub.de
http://www.wiwi.ruhr-uni-bochum.de/international/doubleprogrammes/peking/index.html.en

Double Master’s Degree in Philology (Spanish Department) with Universidad de Oviedo

After spending time at the partner university during the last year of their studies, students gain the Spanish Licenciatura degree and the German Master degree. Language of instruction in Oviedo is Spanish.

Contact:
Name: Lidia Santiso Saco
Email: lidia.saco@rub.de

Double Master’s degree in Transformation of Urban Landscapes (TUL)

Faculty of Geosciences, Department of Geography
Degree: Master of Science (RUB) and Master in Engineering (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 approx. €270 (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

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.
Fees: RUB’s social fee approx. €270 (per semester)
Contact: Prof. Dr. Brand-Saberi. Phone: +49 (0)234 32-24556, email: iSTEM@rub.de
More information: www.rub.de/istem
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. Horst Meier
Email: Meier@lps.rub.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 other university. 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 Dr. Jens Lieven
Email: Gerhard.lubich@rub.de jens.lieven@ruhr-uni-bochum.de

Double Master’s Degree “Diskurse und Praktiken kultureller Vermittlung / Discours et Pratiques de Médiation 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 spent 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 approx. €270 (per semester)
Special feature: first semester taught in Venice
Contact: Prof. Dr. Hans-Joachim Heintze Email: Hans-Joachim.Heintze@rub.de
More information: www.emahumanrights.org

Joint Master’s Degree Film and Audiovisual Media

Integrated studies in three different European countries, at key media and media studies locations.

Contact:
Name: Prof. Dr. Oliver Fahle
Email: Oliver.Fahle@rub.de
www.rub.de/ifm/studium/master-film-av.html
Name: Jasmin Stommel
Email: Jasmin.Stommel@rub.de
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 or other foreign languages.

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

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CENTRE FOR RELIGIOUS STUDIES

Buddhist, Hindu and Jain Ritual Practices: Architectural and Pictoral Contexts

Language: English

Department: CERES
Degree programme: Bachelor & Master
Contact: Name, Phone, Email Dr. Jessie Pons, +49 (0)234 - 32 22955, Jessie.Pons@rub.de
Module: Name Indian Religious Studies
Module taught entirely in foreign language: No
Course type: Seminar
Credit Points:
Teacher/Lecturer: Dr. Jessie Pons
Requirements: Basic Knowledge of Indian Religion.

Room: Universitätsstrasse 90a, 0/013
Day, Time: Wed 12-14
Begin: 2015-10-21

Course description:
This course will deal with the multiple symbolic meanings encompassed by and in Buddhist, Hindu and Jain temples. In this respect, the practical modalities of religious daily and public rituals, the meanings associated to architectural and sculptural elements as well as the political, economic and social roles played by stupas and temples will be considered. During the course, selected Buddhist, Hindu and Jain sacred buildings will be examined and discussed in light of a wide array of sources and media: narrative and normative texts, epigraphic data, ground plans and elevations of temples as well as iconographic programmes. The objective is for students to acquire a basic knowledge of the main principles of Hindu, Buddhist and Jain architectures and iconographies as well as a solid understanding of rituals may these be shared by the three religious faiths or be specific to them.

Proofs of academic achievement:
This course is credited for „Optionalbereich“. No
This course is especially suitable for exchange students. No

Diffusion and development of Buddhism in Central Asia

Language: English

Department: CERES
Degree programme: Bachelor
Contact: Dr. Erika Forte +49 234 32-23588, erika.forte@rub.de
Module: Central Asia
Module taught entirely in foreign language: No
Course type: Course
Credit Points:
Teacher/Lecturer: Dr. Erika Forte
Requirements:

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<tr>
<td>Universitätsstrasse 90a, 3/306</td>
<td>Wed 13-14</td>
<td>2015-10-21</td>
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Course description:
The seminar aims at deepening the knowledge of the history of Buddhism in the area of Central Asia. Originated in NW India, Buddhism penetrated in Central Asia starting around the turn of the 1st millennium. From this region (especially the eastern part of Central Asia, i.e. the Tarim basin region) Buddhism spread through Tibet and East Asia (China, Korea, Japan). During the seminar the different forms (schools) of Buddhism and local developments of the religion in the various centres (esp. in the Tarim basin) will be analysed. In some centres hinayana thoughts were more popular, while others privileged mahayana-oriented schools of Buddhism. In other cases evidence hints at the presence of tantric ideas. The historical period under examination comprises largely the 1st millennium CE, with inquiries into up to the 15th-16th c., depending on the religious developments of the single centres.
The seminar can be used to deepen the topic "Buddhism" of the Vorlesung "History of Religions in Central Asia".

Proofs of academic achievement:
This course is credited for „Optionalbereich“. Yes
This course is especially suitable for exchange students. No

History of Religions in Central Asia

Language: English

Department: CERES
Degree programme: Bachelor
Contact: Dr. Erika Forte +49 234 32-23588, erika.forte@rub.de
Module: Central Asia
Module taught entirely in foreign language: No
Course type: Seminar
Credit Points:
Teacher/Lecturer: Dr. Erika Forte
Requirements: None.

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<tr>
<td>Universitätsstrasse 90a, 4/413</td>
<td>Mon 10-12</td>
<td>2015-10-26</td>
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Course description:
Central Asia proves to be an extremely interesting stage for the study of the history of religions. Traveling along the extensive trade routes, through the contacts between different peoples and
cultures and the resulting osmotic processes, the world’s main religious traditions transited here and developed, often undergoing large transformations resulting in new traditions.

The course will introduce the students to the history of the formation and development of the main religions in Central Asia, from early times to present. The students will familiarise themselves with the history of Zoroastrianism, Judaism, Manichaeism, Nestorianism, Buddhism, and Islam in this vast area extending from the Caspian sea to the borders of China.

Specific readings related to the topics of each lesson will be assigned during the course and discussed in class.

Course assessment: Preparation of the texts to be read, regular attendance of the lecture and active participation are recommended. For the completion of the module part a written essay and a final exam are required.

Proofs of academic achievement:

This course is credited for „Optionalbereich“. Yes
This course is especially suitable for exchange students. No

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**Imagined Identities and the 10 Lost Tribes: Searching for Hidden Jews since 1500**

**Language:** English

**Department:** CERES

**Degree programme:** Master

**Contact:** Prof. Dr. Alexandra Cuffel, +40 (0)234 - 32-22336, alexandra.cuffel@rub.de

**Module:** Jewish Studies

Module taught entirely in foreign language: yes/no No

**Course type:** Seminar

**Credit Points:**

**Teacher/Lecturer:** Prof. Dr. Alexandra Cuffel, appl. Prof. Dr. Adam Knobler

**Requirements:** Knowledge of Judaism.

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<td>Universitätsstrasse 90a, 0/013</td>
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<td>Friday, 4 December 10-12</td>
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<td>Tuesday, 16 February 10-12, 1:30-3.30</td>
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<td>Thursday, 18 February 10-12, 1:30-3.30</td>
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<td>Tuesday, 23 February 10-12, 1:30-3.30</td>
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<td>Thursday, 25 February 10-12, 1:30-2:30</td>
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Course description:
Taught in English, this block seminar is designed to investigate the claims of various individuals or groups to be members of or represent one or more of the so-called "10 Lost Tribes of Israel", assertions by historians, theologians and other observers that the 10 Lost Tribes of Israel could be found in various parts of the world under non-Jewish guises, or the adoption of Jewish identity as a form of resistance. These include the American Indians, the Maori of New Zealand, the Japanese and the English, to name but a few. We will examine how these various uses of these forms of claimed or imagined Jewish identities intersect with one another and were used both by the claimants themselves and outsiders. Students will be expected to do substantial reading before the course begins in November: A. Neubauer, "Where are the Ten Tribes?," Jewish Quarterly Review 1/1 (1888), 14-28, 1/2 (1889), 95-114, 1/3 (1889), 185-201 and 1/4 (1889) 408-423 [all posted on MOODLE] AND EITHER Tudor Parfitt, The lost tribes of Israel AND/OR Zvi Ben Dor Benite, The ten lost tribes.

Proofs of academic achievement:
This course is credited for „Optionalbereich“. No
This course is especially suitable for exchange students. No

Introduction to the Cairo Genizah and Judeo-Arabic Language and Script

Language: English

Department: CERES
Degree programme: Bachelor & Master
Contact: Prof. Dr. Alexandra Cuffel, +40 (0)234 · 32·22336, alexandra.cuffel@rub.de
Module: Introduction to the Cairo Genizah and Judeo-Arabic Language and Script
Module taught entirely in foreign language: No
Course type:
Credit Points:
Teacher/Lecturer: Prof. Dr. Alexandra Cuffel
Requirements: Texts include everything from official documents to personal letters, poetry, and theological and philosophical treatises. Ability to read primary sources in Arabic with a dictionary required. Knowledge of Hebrew alphabet a plus.

Students will be required to do some preparatory reading and work before the class begins: all students must have read at least one volume of S.D. Goitein, A Mediterranean Society AND Jessica Goldberg, "On reading Goitein’s A Mediterranean Society: a view from economic history," Mediterranean Historical Review 26/2 (2011) 171-186. Students will be required to memorize the Hebrew alphabet and the transliteration system from Arabic to Hebrew. A chart to facilitate this is posted on Moodle. Students are also expected to work through a series of brief excerpts in Judeo-Arabic to practice their transliteration and translation skills into German or English. These, too, will be posted on Moodle. Students may write their research papers in German or English.
Students with no background the history of Jews under Muslim rule are recommended to read Mark Cohen, *Under Crescent and Cross*.

**Course description:**
Taught in English, this block seminar is designed to introduce students to sources for the study of Jewish Life under Muslim rule in Egypt, from the Fatimid to the Mamluk periods, through the documents of the Cairo Genizah. Students will receive a basic introduction to Judeo-Arabic, Judeo-Arabic manuscripts and palaeography, and learn the resources for finding manuscripts and published texts from the Cairo Genizah, a vast repository of primary documents from the 10th to the 19th century, mostly in Judeo-Arabic, which were preserved because of the prohibition against destroying any text with the name of God in it.

**Proofs of academic achievement:**
This course is credited for „Optionalbereich“. Yes
This course is especially suitable for exchange students. No

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**Religious material culture along the Silk Road. Art and archaeology of the 1st millenium in Central Asia**

**Language:** English

**Department:** CERES

**Degree programme:** Bachelor & Master

**Contact:** Dr. Erika Forte +49 234 32-23588, erika.forte@rub.de

**Module:** Central Asia

**Module taught entirely in foreign language:** No

**Course type:** Seminar

**Credit Points:**

**Teacher/Lecturer:** Dr. Erika Forte

**Requirements:** Basic Knowledge of Central Asian Religion.

**Room**
Universitätsstrasse 90a, 0/013

**Day, Time**
Wed 10-12

**Begin**
2015-10-21
Course description:
The focus of the Seminar is on religion and material culture. The development of the religious beliefs will be studied in relation to: the objects produced in function of the religious practice (for example: ritual implements or objects of everyday religiosity); the various visual expression (painting and sculpture, iconography), etc.

Prof. Meinert plans an excursion to Central Asia to visit Buddhist sites along the Silk Road after the summer term 2016. Anybody interested to participate needs to complete this class and a follow up class of Prof. Meinert in SoSe 2016. Only students who participated in both classes are entitled to join the excursion. During the SoSe 2016 students will also participate in the actual organization of the excursion.

Proofs of academic achievement:

This course is credited for „Optionalbereich“. No
This course is especially suitable for exchange students. No

Sacred Spaces for religious practice: an overview on ancient religious architecture in Central Asia

Language: English

Department: CERES
Degree programme: Bachelor & Master
Contact: Dr. Erika Forte +49 234 32-23588, erika.forte@rub.de
Module: Central Asia
Module taught entirely in foreign language: No
Course type: Seminar
Credit Points:
Teacher/Lecturer: Dr. Erika Forte
Requirements: Basic Knowledge of Central Asian Religion.

Room
Universitätsstrasse 90a, 0/012
Day, Time
Tue 10-12
Begin
2015-10-27

Course description:
The seminar will study how architectural spaces are conceived in relation to the religious context and in function of ritual requirements and practices. We will analyse different types, styles and functions of religious buildings in ancient Central Asia in order to understand how the space is designed in relation to the historical and religious context and to the different ritual needs. The evidence for this study will be drawn both from archaeology and ancient literary sources.

Proofs of academic achievement:

This course is credited for „Optionalbereich“. No
This course is especially suitable for exchange students. No
Tasawwuf and Sufism in South Asia

Language: English

Department: CERES
Degree programme: Bachelor
Contact: Sajida Fazal, +49 (0)234 - 32 23878, sajida.fazal@rub.de
Module: Islam
Module taught entirely in foreign language: No
Course type: Seminar
Credit Points:
Teacher/Lecturer: Sajida Fazal
Requirements: Knowledge of English is required and prior knowledge of Islam will be an advantage.

Room
Universitätsstrasse 90a, 0/013
Day, Time
Wed 16-18
Begin
2015-10-21

Course description:
This seminar will provide the historical background of Sufism in south Asia while explaining the concept of Tasawwuf in Islam. The course will enhance the knowledge about Sufi orders in Islam and will explain the major services of Sufi saints in the sub-continent. This course will help students to analyse the Sufi poetry in religious dimensions and will provide knowledge about overall Sufism. The course will be commenced in English and students will be given texts in advance to prepare for discussion. Active and regular participation will be required in this seminar.

Proofs of academic achievement:
This course is credited for „Optionalbereich“. No
This course is especially suitable for exchange students. No

Travel accounts of religious pilgrims across Central Asia

Language: English

Department: CERES
Degree programme: Bachelor & Master
Contact: Dr. Erika Forte +49 234 32-23588, erika.forte@rub.de
Module: Languages
Module taught entirely in foreign language: No
Course type: Seminar
Credit Points:
Teacher/Lecturer: Dr. Erika Forte
Requirements: Students who will attend the class should have at least a basic knowledge of Chinese.
Course description:
The oldest literary evidence of a pilgrim travelling from China to Central Asia to acquire sacred texts of Buddhism goes back to the 3rd c. CE. In the following centuries the traffic from China to India, passing through Central Asia, increased dramatically, reaching its peak around the 7th-8th c. The biographies or travel accounts of such pilgrims that are preserved in the Chinese literature - besides offering interesting insights into the life of pilgrims en route - provide a precious contemporary evidence on the “foreign countries”: the religious places, customs, legends, social organisation.
During the seminar selected passages from Chinese historical literature related to pilgrimage will be read and analysed. Secondary literature will be used to provide students with the necessary historical and cultural background.

Seminar assessment: attendance, active participation, preparation of the passages to be read and discussed in the class.

Proofs of academic achievement:

This course is credited for „Optionalbereich“. Yes
This course is especially suitable for exchange students. No

THEOLOGY OF CREATION

Language: English

Department: Christian social teaching/New Testament
Contact: jachim.wiemeyer@rub.de, thomas.soeding@rub.de
Degree programme: Bachelor/Master/...
Module: BA 5, BA 7, MA 2
Module taught entirely in foreign language: No
Course type: workshop/seminar
Credit Points: 5
Teacher/Lecturer: Prof. Dr. Joachim Wiemer/Prof. Dr. Thomas Söding
Requirements: Bachelor’s Degree in... /...

Course description:
Some of the central challenges of our century are based upon comprehensive interventions in the natural environment caused by human economical activities. The workshop (summer school) focuses on questions regarding the creation from a biblical perspective. It will also be discussed how environmental aspects can be integrated better within the economy. The workshop is provided for students of different faculties. Visits of different companies and interviews with their
entrepreneurs are scheduled to discuss the question of whether and how the environmental responsibility can be transferred into business practices. The workshop takes place in cooperation with the Dortmund Educational Institute “Konrad-Adenauer-Stiftung”.

A certificate can be acquired as advanced seminar in the subject “New Testament” or “Christian Social Studies”.

The workshop will not exclusively be in English.

Application deadline 17.07.2015

Proofs of academic achievement: Oral examination/written examination/...

This course is credited for „Optionalbereich“. No
FACULTY OF BIOLOGY AND BIOTECHNOLOGY

Computer Practical: Introduction to Bioinformatics for Students of Biochemistry (M.Sc.)

Language: English/...

Department: Lehrstuhl für Biophysik
Contact: PD Dr. Mathias Lübken, Phone 24465, E-Mail Mathias.Luebben@bph.rub.de
Degree programme: Bachelor/Optionalbereich and Master of Biology or Biochemistry
Module: 190703
Module taught entirely in foreign language: Yes
Course type: Computer practical exercise
Credit Points: 0
Teacher/Lecturer: PD Dr. Mathias Lübken, Prof. Dr. Axel Mosig, Prof. Dr. Raphael Stoll, Dr. Steffen Wolf

Requirements: Students of the “Optionalbereich” should have a basic knowledge in Molecular Biology; Students of Biochemistry should have a Bachelor degree – The lecture “Introduction to Bioinformatics for Students of Biochemistry (M.Sc.)” (Module 190703) must be attended in parallel.

Room
ND04/99

Day, Time
Friday, time to be announced

Begin
To be announced in the accompanying lecture

Course description:
In this computer practical we deepen the basic introduction into various fields of bioinformatics, such as data banks and techniques of data recording, molecular sequence analysis and comparison, phylogeny, structure prediction of RNA and proteins, molecular structure analysis, molecular graphics and simulation of molecular dynamics. Special emphasis is on the application of bioinformatic tools. The exercises are accompanied by a lecture (IVV 190702).

Proofs of academic achievement: The proof of achievement is coupled to the written examination according to the lecture IVV 190702,

This course is credited for „Optionalbereich“. Yes

Lecture Introduction to Bioinformatics for Students of Biochemistry (M.Sc.)

Language: English/...

Department: Lehrstuhl für Biophysik
Contact: PD Dr. Mathias Lübben, Phone 24465, E-Mail Mathias.Luebben@bph.rub.de
Degree programme: Bachelor/Optionalbereich and Master of Biology or Biochemistry
Module: 190702
Module taught entirely in foreign language: Yes
Course type: Lecture
Credit Points: 5
**Teacher/Lecturer:** PD Dr. Mathias Lübben, Prof. Dr. Axel Mosig, Prof. Dr. Raphael Stoll, Dr. Steffen Wolf

**Requirements:** Students of the “Optionalbereich” should have a basic knowledge in Molecular Biology; Students of Biochemistry should have a Bachelor degree

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<td>HGA20</td>
<td>Friday, 8.15-10.00</td>
<td>23/10/2015</td>
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**Course description:**

In this lecture we give a basic introduction into various fields of bioinformatics, such as data banks and techniques of data recording, molecular sequence analysis and comparison, phylogeny, structure prediction of RNA and proteins, molecular structure analysis, molecular graphics and simulation of molecular dynamics. Special emphasis is on the application of bioinformatic tools. When needed, the used computer algorithms are discussed. The lecture is accompanied by a computer practical (IVV 190703), which takes place as announced in the lecture.

**Proofs of academic achievement:** Written examination

This course is credited for „Optionalbereich“. Yes

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**190587: 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:** Kolloquium zu Forschungsarbeiten des Lehrstuhls Pflanzenphysiologie

Module taught entirely in foreign language: Yes

**Course type:** seminar

**Credit Points:** 2

**Teacher/Lecturer:** Prof. Dr. Ute Krämer/PD Dr. Markus Piotrowski/Prof. Dr. Danja Schünemann

**Requirements:** -

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<tr>
<td>ND 3/34</td>
<td>Friday, 8.30-10.00</td>
<td>23/10/2015</td>
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**Course description:**

Talks about ongoing research at the institute

**Proofs of academic achievement:** participation and lecture

This course is credited for „Optionalbereich“. No
190563: Journal Club Plant Physiology

Language: English

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

Requirements: -

Room | Day, Time | Begin
--- | --- | ---
ND 3/34 | Monday, 12.00-13.30 (every four weeks) | 02/11/2015

Course description:
Reports on recent publications in plant physiology

Proofs of academic achievement: report

This course is credited for „Optionalbereich“. No

190594: 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: Kolloquium Metallhomöostase; Grundlagen und Praxis des wissenschaftlichen Arbeitens in der Pflanzenphysiologie
Module taught entirely in foreign language: Yes
Course type: seminar
Credit Points: 1
Teacher/Lecturer: Prof. Dr. Ute Krämer

Requirements: -

Room | Day, Time | Begin
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ND 3/34 | Wednesday, 9.00-11.00 | 21/10/2015

Course description:
Reports on research related to metal homoeostasis and plant metabolism

Proofs of academic achievement: participation
Enzyme Optimization

Department: Junior Research Group for Microbial Biotechnology
Contact: Robert Kourist, 25029, Robert.Kourist@rub.de
Degree programme: Bachelor/Master/
Module: Enzyme Optimization
Module taught entirely in foreign language: Yes
Course type: Lecture
Credit Points: 3/5
Teacher/Lecturer: Prof. Dr. Robert Kourist
Requirements: Bachelors Degree in... /...

Room
ND7/133

Day, Time
Monday 12-13.30

Begin
19/10/2015

Course description:
The lecture presents methods for the optimization of the catalytic properties of biocatalysts. The lecture addresses students of the 4th year bachelor or 1st year Master in Biology. The first part deals with the basic concepts of enzyme engineering, namely mutagenesis, molecular modeling and high-throughput screening. The second is dedicated to recent research examples. Contents:

• Introduction to enzymes
• engineering of lipases
• mutagenesis techniques
• molecular modeling: quantum mechanical and force field-based approaches
• bioinformatic tools for enzyme engineering
• high-through-put techniques
• enzymatic promiscuity
• engineering of enzyme selectivity
• engineering of stability
• catalytic antibodies vs. in silico design of enzymes

Proofs of academic achievement: The lecture is accompanied by a seminar, in which the students present research papers.

Successful participation requires an oral exam

This course is credited for „Optionalbereich“. Yes

LECTURE SERIES IN BIOTECHNOLOGY

Language: English

Department: various Departments of the Faculty Biology and Biotechnology
Contact: PD Dr. Markus Piotrowski, Tel. 0234 32 24290, Markus.Piotrowski@rub.de

Degree programme: Master of Science in Biology

Module: Lecture Series in Biotechnology
Module taught entirely in foreign language: Yes

Course type: Lecture series

Credit Points: none

Teacher/Lecturer: various

Requirements: Bachelor’s Degree in Biology or related disciplines

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<td>Wednesday, 12.00-13.30</td>
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Course description:
The lecture series in biotechnology is taught by various members of the Faculty of Biology and Biotechnology. It covers all modern aspects of white, green, blue and red biotechnology and will also highlight biotechnology research projects of the faculty. This course is mandatory for students with the study focus Biotechnology. It is especially suitable for exchange students.

Proofs of academic achievement: Regular attendance, a written examination is optional for students requiring such an examination

This course is credited for „Optionalbereich“. No
FACULTY OF CIVIL AND ENVIRONMENTAL ENGINEERING

COMPUTATIONAL ENGINEERING

Adaptive Finite Element Methods (CE-17)

Language: English

Department: Computational Engineering
Contact: CompEng Office, 0234/32-25485, compeng-support@rub.de
Degree programme: Computational Engineering
Module: Adaptive Finite Element Methods
Module taught entirely in foreign language: Yes
Course type: Lecture (3h) and exercise (1h)
Credit Points: 6
Teacher/Lecturer: Prof. Dr. C. Kreuzer
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>NB 02/99</td>
<td>Monday 11.00-13.00</td>
<td>19/10/2015</td>
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<tr>
<td>NA 2/99</td>
<td>Wednesday 15.00-17.00</td>
<td>21/10/2015</td>
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Course description:
1st week: Introduction
2nd week – 4th week: Notation
5th – 6th: week Basic a posteriori error estimates
7th week: A catalogue of error estimators
9th -10th week: Data structures
11th – 12th week: Stationary iterative solvers
13th – 14th week: Multigrid methods

Learning objectives: The Student should attain familiarity with advanced finite element methods for the numerical solution of differential equations and of advanced solution techniques for the resulting discrete problems in particular multigrid techniques.

Proofs of academic achievement: written examination

This course is credited for „Optionalbereich“. No

Advanced Control Methods for Adaptive Mechanical Systems (CE-13)

Language: English

Department: Computational Engineering
Contact: CompEng Office, 0234/32-25485, compeng-support@rub.de
Degree programme: Computational Engineering
Module: Advanced Control Methods for Adaptive Mechanical Systems
Module taught entirely in foreign language: Yes
Course type: Lecture (2h) and exercise (2h)
Credit Points: 6
Teacher/Lecturer: Prof. Dr.-Ing. T. Nestorovic
Requirements: Control theory, Structural Control, Dynamics and Apatronics

Course description:
Advanced methods for the control of adaptive mechanical systems are introduced in the course. The introduction involves the recapitulation of the fundamentals of active structural control and the extension to advanced control. In addition to numerical modelling using the finite element approach, system identification is explained as an experimental approach. Theoretical backgrounds of the experimental structural modal analysis are introduced along with the terms and definitions used in signal processing. Experimental modal analysis is explained using the Fast Fourier Transform. Advanced closed loop control methods involving optimal discrete-time control, introduction of additional dynamic for the compensation of periodic excitations and basic adaptive control algorithms are explained and pragmatically applied for solving problems of vibration suppression in civil and mechanical engineering.

Proofs of academic achievement: written examination (75%) and seminar paper (25%)
This course is credited for „Optionalbereich“. No

Computational Plasticity (CE-12)

Language: English

Department: Computational Engineering
Contact: CompEng Office, 0234/32-25485, compeng-support@rub.de
Degree programme: Computational Engineering
Module: Computational Plasticity
Module taught entirely in foreign language: Yes
Course type: Lectures including exercises: 3h
Credit Points: 4
Teacher/Lecturer: Dr.-Ing. U. Hoppe / Dr.-Ing. B. T. Trinh
Requirements: A first degree in engineering sciences, e.g. B.Sc. Basic knowledge of continuum mechanics is required

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<td>IC 04/408</td>
<td>Monday 13.00-16.00</td>
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Course description:
Rheological Models.
Learning objectives: Fundamentals of computational modeling of inelastic materials with emphasis on rate independent plasticity. A sound basis for approximation methods and finite element method. Understanding of different methodologies for discretisation of time evolution problems, and rate independent elasto-plasticity in particular.

Proofs of academic achievement: written examination

This course is credited for „Optionalbereich“. No

Computational Wind Engineering (CE-14) 

Language: English

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

Degree programme: Computational Engineering
Module: Computational Wind Engineering
Module taught entirely in foreign language: Yes
Course type: Lecture (1h) and exercise (1h)
Credit Points: 3
Teacher/Lecturer: Prof. Dr.-Ing. R. Höffer

Requirements: Modern Programming Concepts in Engineering, Fluid Dynamics

Room 
IC 03/647 
Day, Time 
Tuesday 12.15-13.45 
Begin 
20/10/2015

Course description:
Details and guidelines about the application of CFD methods in wind engineering are introduced and studied. Related problems which are relevant for practical applications and solution procedures are investigated. The lectures and exercises contain the following topics:
- short review of boundary layer turbulence and the Navier-Stokes equations
- turbulence models for implementation to the computation for mean wind quantities: k-ε-models, k-ω-models and derivatives
- Implementation of turbulence for time resolved computations: Large-eddy simulation, concept of DNS
- isotropic turbulence and turbulence in a boundary layer flow
- mesh generation strategies and introduction to the mesh generator ICEM
- Introduction to solver applications using the program systems ANSYS CFX and OpenFoam

Within the scope of the exercises, the students are guided to working out assessment and solution strategies for related, typical technical problems in wind engineering.

Proofs of academic achievement: written examination

This course is credited for „Optionalbereich“. No

Computer-oriented Design of Steel Structures (CE-P03)

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<tr>
<td>HZO 100</td>
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<td>HZO 100</td>
<td>Thursday 13.15-14.45</td>
<td>22/10/2015</td>
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Course description:
This course is introductory - by no means does it claim any completeness in such a dynamically developing field as numerical analysis of slender steel structures. The course intents to achieve a basic understanding of applied mechanics approaches to slender steel structure modelling, which can serve as a foundation for exploring more advanced theories and analyses of different kind of structures.

Basics of Analyses, Design and Fundamentals for Computer-Based Calculations
- Basic principles of structural design
- Beam theory and torsion
- Finite elements for beams and plates
- Software for analyses

Stability Behaviour of Slender Structures and Second Order Theory
- Geometric non-linear design of structures - second order analysis
• Buckling of linear members and frames
• Lateral buckling and lateral torsional buckling
• Eigenvalues and –shapes
• Numerical methods for plate buckling

Structural Behaviour and Verifications Regarding Crane Supporting Structures
• Fatigue
• Verification methods for crane supporting structures

Proofs of academic achievement: written examination

This course is credited for „Optionalbereich“. No

Design Optimization (CE-15)

Language: English

Department: Computational Engineering
Contact: CompEng Office, 0234/32-25485, compeng-support@rub.de
Degree programme: Computational Engineering
Module: Design Optimization
Module taught entirely in foreign language: Yes
Course type: Lecture (2h) and exercise (2h)
Credit Points: 6
Teacher/Lecturer: Dr.-Ing. K. Lehner / Prof. Dr.-Ing. M. König

Requirements: -

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<td>IC 04/634 CIP-Pool</td>
<td>Wednesday 12.15-13.45</td>
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<td>IC 04/634 CIP-Pool</td>
<td>Thursday 8.30-10.00</td>
<td>22/10/2015</td>
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Course description:
Introduction: Definition of optimization problems, History of optimization
- Design as a process: Conventional design, Optimization as a design tool
- Optimization from a mathematical viewpoint: Numerical approaches, Linear optimization, Convex domains, partitioned domains, Examples
- Categories of opt. variables: Explicit design variables, Synthesis and analysis, Discrete and continuous variables, Shape variables
- Dependant design variables
- Realization of constraints: Explicit and implicit constraints, Constraint transformation, Equality constraints
- Optimization criterion: Objectives in structural engineering
- Application of design optimization in structural engineering: Trusses and beams, Framed structures, Plates and shells, Mixed structures
- Solution techniques: Direct and indirect methods, Gradients, Hessian matrix, Kuhn-Trucker conditions

Learning objectives: Acquisition of skills in design optimization to be able to model, solve and evaluate optimization problems for moderately complex technical systems.
Dynamics of Structures (CE-11)

**Department**: Computational Engineering

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

**Degree programme**: Computational Engineering

**Module**: Dynamics of Structures

Module taught entirely in foreign language: Yes

**Course type**: Lecture (2h) and exercise (2h)

**Credit Points**: 6

**Teacher/Lecturer**: Prof. Dr. techn. G. Meschke / Prof. Dr.-Ing. R. Höffer

**Requirements**: A first degree in engineering sciences (e.g. B.Sc.), A profound previous knowledge in fluid mechanics, especially mechanics of solids and numerical methods in dynamics

**Course description**:

The lecture recapitulates and deepens the methodology of the calculation of single- and multi-degree-of-freedom oscillations of structures. Dynamical analyses are based on simplified models of structures and on the application of modal analysis. A second focus is put on the modelling and the computation of random vibrations of structures. The spectral method for a stationary, broad-banded excitation mechanism like wind excitation is introduced. The response spectrum method for the treatment of earthquake excitations is applied. In addition to the procedures in the frequency domain numerical representations of stochastic processes in time domain are explained.

The contents of the lecture are deepened during the exercises and through seminar papers performed by the students. The presentation of related results through students is part of the module.

Learning objectives: The students shall attain the qualifications to apply realistic models of dynamically excited engineering structures and of the excitation mechanism including simplified, stochastic excitation models for wind or earthquake impacts, and to analyse the structural responses.

**Proofs of academic achievement**: written examination

**This course is credited for „Optionalbereich“**: No
Energy Methods in Material Modeling (CE-21)

**Department**: Computational Engineering  
**Contact**: CompEng Office, 0234/32-25485, compeng-support@rub.de  
**Degree programme**: Computational Engineering  
**Module**: Energy Methods in Material Modeling  
**Module taught entirely in foreign language**: Yes  
**Course type**: Block lecture  
**Credit Points**: 4  
**Teacher/Lecturer**: Dr.-Ing. habil. R. Fechte-Heinen  
**Requirements**: Mechanical Modelling of Materials, Continuum Mechanics

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**Course description:**

In a variety of modern engineering materials, such as shape memory alloys or multiphase steels, the transformation between different crystallographic phases is technically used to obtain outstanding material properties.

This course first gives a short introduction to these phase transformation phenomena and the underlying mechanisms. Then, the origin of multiphase microstructures is discussed against the background of energy minimization. Suitable mathematical concepts are shown which in principle allow the prediction of the microstructural and macroscopic material properties of such materials. Different approaches to numerically estimate the material behavior are given. Finally, the theoretical and numerical concepts are exemplified establishing micromechanical material models for shape memory alloys.

The structure of the course is as follows:

1. Introduction  
   - Energy methods and material models  
   - Examples: martensitic microstructures - shape memory alloys - multiphase steels

2. Energy minimization of phase transforming materials  
   - Boundedness – Coercivity - Notions of convexity

3. Estimates of the energetically optimal microstructure  
   - Quasiconvexification – Convexification – Polyconvexification - Rank-1-convexification

4. Example: Shape memory alloys  
   - Introduction and material model – Convexification - Translation method - Lamination

**Proofs of academic achievement**: written examination, attendance at the class is obligatory (at minimum 75%)

**This course is credited for „Optionalbereich“**: No
Finite Element Methods in Linear Structural Mechanics (CE-P05)

Department: Computational Engineering
Contact: CompEng Office, 0234/32-25485, compeng-support@rub.de
Degree programme: Computational Engineering
Module: Finite Element Methods in Linear Structural Mechanics
Module taught entirely in foreign language: Yes
Course type: Lecture (2h) and exercise (2h)
Credit Points: 6
Teacher/Lecturer: Prof. Dr. techn. G. Meschke
Requirements: Basics in Mathematics, Mechanics and Structural Analysis (bachelor level)

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<td>HIC (lecture)</td>
<td>Monday 08.30-10.00</td>
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<tr>
<td>HIC (exercise)</td>
<td>Monday 10.15-11.45</td>
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Course description:
Introduction to the finite element method in the framework of linear elastodynamics. Based upon the weak form of the boundary value problem principles of spatial discretization using the finite element method are explained step by step. First, one-dimensional isoparametric p-truss elements are used to explain the fundamentals of the finite element method. Afterwards the same methodology is used to develop two-(plane stress and plane strain) and three-dimensional isoparametric p-finite elements for linear structural mechanics. In addition to analyses related to structural mechanics, the application of the finite element method to the spatial discretization of problems associated with transport processes within structures (e.g. heat conduction, pollutant transport, moisture transport, coupled problems) is demonstrated. The second part of the lecture is concerned with finite element models for beams and plates. In this context aspects of element locking and possible remedies are discussed. The lectures are supplemented by exercises to promote the understanding of the underlying theory and to demonstrate the application of the finite element method for the solution of selected examples. Furthermore, practical applications of the finite element method are demonstrated by means of a commercial finite element program.

Proofs of academic achievement: written examination (85%) and seminar papers (15%)

This course is credited for „Optionalbereich“. No
Module: Mathematical Aspects of Differential Equations and Numerical Mathematics

Module taught entirely in foreign language: Yes

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

Credit Points: 6

Teacher/Lecturer: Jun.-Prof. Dr. B. Bramham

Requirements: Basic calculus and experience with matrices

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<td>NB 6/99</td>
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Course description:

Proofs of academic achievement: written examination

This course is credited for „Optionalbereich“. No

Mechanical Modelling of Materials (CE-P02)

Language: English

Department: Computational Engineering

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

Degree programme: Computational Engineering

Module: Mechanical Modelling of Materials
Module taught entirely in foreign language: Yes

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

Credit Points: 6

Teacher/Lecturer: Prof. Dr.-Ing. H. Steeb / Dr.-Ing. R. Kazakeviciute-Makovska

Requirements: Basic knowledge in Mathematics and Mechanics

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<td>HZO 90</td>
<td>Tuesday 14.00-16.00</td>
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Course description:
Several advanced issues of the mechanical behaviour of materials are addressed in this course. More precisely, the following topics will be covered:
- Basic concepts of continuum mechanics (introduction)
- Introduction into the rheology of materials (solid, fluid, multiphase materials, jammed materials)
- Theoretical concepts of constitutive modelling
- 1-dimensional constitutive approaches for
  - Elasticity, hyperelasticity
- Inelasticity (plasticity, damage, viscoelasticity)
- Multiphase/porous materials
- 3-dimensional generalization of material modelling concepts
- Simple boundary and initial value problems

Proofs of academic achievement: written examination

This course is credited for „Optionalbereich“. No

Modern Programming Concepts in Engineering (CE-P04)

Language: English

Department: Computational Engineering
Contact: CompEng Office, 0234/32-25485, compeng-support@rub.de
Degree programme: Computational Engineering
Module: Modern Programming Concepts in Engineering
Module taught entirely in foreign language: Yes
Course type: Lecture (2h) and exercise (2h)
Credit Points: 6
Teacher/Lecturer: Prof. Dr.-Ing. M. König
Requirements: -

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<td>IC 03/604</td>
<td>Thursday 08.00-10.00</td>
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Course description:

Lectures and exercises cover the following topics:
- Principles of object-oriented modelling
  - Encapsulation
  - Polymorphism
  - Inheritance
- Unified Modelling Language (UML)
- Basic programming constructs
- Fundamental data structures
- Implementation of efficient algorithms
  - Vector and matrix operations
  - Solving systems of linear equations
  - Grid generation techniques
- Using software libraries
  - View3d a visualization toolkit
  - Packages for graphical user interfaces

During the exercises, students practice object-oriented programming techniques in the computer lab on the basis of fundamental engineering problems.
Parallel Computing (CE-16)

Department: Computational Engineering
Contact: CompEng Office, 0234/32-25485, compeng-support@rub.de
Degree programme: Computational Engineering
Module: Parallel Computing
Module taught entirely in foreign language: Yes
Course type: Lecture (2h) and exercise (1h)
Credit Points: 4
Teacher/Lecturer: Dr.-Ing. K. Lehner / Prof. Dr.-Ing. M. König
Requirements: Modern Programming Concepts in Engineering

Course description:
- Introduction to parallel computing
  o Examples of simple parallel computational problems
- Concepts of parallel computing
  o Levels of parallelism - Interconnection networks
  o Parallel computer architectures
  o Operating systems - Interaction of parallel processes
  o Parallel programming with shared memory and distributed memory
  o Performance of parallel computing: speedup, efficiency, redundancy, utilization
- Parallel programming for shared memory using the programming interfaces OpenMP in Fortran and C/C++, and JOMP in Java
- Parallel programming for distributed memory with the programming interfaces MPI in Fortran and C/C++, and mpiJava in Java
- Designing parallel programs by applying functional decomposition to
  o matrix methods
  o direct and iterative solution methods for systems of linear equations
- Designing parallel structural analysis methods based on domain decomposition and substructure methods
- Computational implementation and parallel applications on a Linux-Cluster, Programming in Fortran, C/C++ and Java

Proofs of academic achievement: written examination

This course is credited for „Optionalbereich“. No
Safety and Reliability of Engineering Structures (CE-18)

Department: Computational Engineering
Contact: CompEng Office, 0234/32-25485, compeng-support@rub.de
Degree programme: Computational Engineering
Module: Safety and Reliability of Engineering Structures
Module taught entirely in foreign language: Yes
Course type: Lecture (2h) and exercise (2h)
Credit Points: 6
Teacher/Lecturer: PD Dr.-Ing. habil. M. Kasperski
Requirements: Basic knowledge in structural Engineering

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<td>IC 03/606</td>
<td>Thursday 10.00-12.00</td>
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Course description:
Introduction - causes of failures
Basic definitions - safety, reliability, probability, risk
Basic demands for the design and appropriate target reliability values: Structural safety, Serviceability, Durability, Robustness
Formulation of the basic design problem: $R > E$
Descriptive statistics: mean, median, standard deviation, skewness, peakedness
Theoretical distributions: Bernoulli, Poisson, Rectangular, Triangular, Beta, Normal, Log-Normal, Exponential, Generalized Extreme Value, Generalized Pareto
Failure probability and basic design concept considering confidence
Code concept (level 1 approach) and First Order Reliability Method (level 2 approach)
Full reliability analysis - level 3 approach
Probabilistic models for actions and combinations of actions
Probabilistic models for resistance: cross section - structure
Model uncertainties, non-linear methods and Monte-Carlo Simulation
Learning objectives: Students should attain the following qualifications / competencies:
Basic knowledge on statistics and probability, deeper understanding of the basic principles of reliability analysis in structural engineering, basic knowledge on how codes try to meet the reliability demands in regard to structural safety and serviceability, basic knowledge in simulation techniques

Proofs of academic achievement: written examination (85%) and Project work on simulation techniques (15%)

This course is credited for „Optionalbereich“.
Variational Calculus and Tensor Analysis (CE-WP01)

**Language:** English

**Department:** Computational Engineering

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

**Degree programme:** Computational Engineering

**Module:** Variational Calculus and Tensor Analysis

Module taught entirely in foreign language: Yes

**Course type:** Lecture (2h) and exercise (1h)

**Credit Points:** 4

**Teacher/Lecturer:** Dr.-Ing. R. Jänicke

**Requirements:** Basic knowledge in Mathematics and Mechanics

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<td>HZO 90</td>
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**Course description:**

Several issues of variational calculus and tensor analysis are addressed in this course. More precisely, the following topics will be covered:

- Motivation: Why do we need variations and tensors in mechanics?

Variational calculus:
- First and second variation
- Direct methods
- Constrained minimisation problems, Lagrange multipliers
- Hamilton’s principle

Tensor analysis:
- Vector and tensor notation
- Recall of vector and tensor algebra
- Dual bases, coordinates in Euclidean space
- Differential calculus
- Scalar invariants and spectral analysis
- Isotropic functions

Applications to continuum mechanics will be introduced.

Forms

**Proofs of academic achievement:** written examination

This course is credited for „Optionalbereich“. No
FACULTY OF EAST ASIAN STUDIES

China's New Roles in Global Affairs

Language: English/...

Department: East Asian Studies, Politics of East Asia / International political Economy East Asia, Akafö-Gebäude, Unistr. 134
Contact: Prof. Gottwald, 26748, politik-ostasiens@rub.de / Prof. Bersick, 21852, ipea@rub.de
Degree programme: Master
Module: ASO and RIO
Module taught entirely in foreign language: Yes
Course type: Seminar
Credit Points: 4.5
Teacher/Lecturer: Prof. Dr. Gottwald / Prof. Dr. Bersick

Requirements:

Room: GABF 04/409
Day, Time: Tuesday 16-18.30
Begin: 20/10/2015

Course description:
China's international roles are fundamentally changing. In this research seminar we apply a role theory approach to identify the domestic sources of China's foreign policies and their impact on China's relations with other states and international organisations. The seminar offers an in-depth introduction into a new approach to the study of China in global affairs. Its four-hour structure allows for intensive conceptual and empirical work in case studies. Students will have the opportunity to discuss their findings at a workshop with guest speakers.
Harnisch, Sebastian / Bersick, Sebastian / Gottwald, Jorn-Carsten (eds), China's International Roles, New York / London: Routledge.
Foreign Policy Analysis, vol. 8, no. 1, Special Issue on Role Theory in Foreign Policy Analysis

Proofs of academic achievement: Written examination, presentation

This course is credited for „Optionalbereich“. No

Civil societies in China, Japan and South Korea in comparative perspective

Language: English/...

Department: East Asian Studies, Politics of East Asia
Contact: Szczepanska, Kamila, Mi, 15-17 Uhr, AKAFOE 2/14, und nach Vereinbarung, Kamila.Szczepanska@rub.de
Degree programme: Bachelor
Module: Länderübergreifende Politikfeldanalyse LPO
Module taught entirely in foreign language: Yes
Course type: Seminar 090303
Credit Points: 5
Teacher/Lecturer: Szczepanska, Kamila, Ph.D
Requirements: The students must have 1) completed their GPO modules and 2) participated in APO classes before taking this LPO. Completion of the module VePoWi is highly recommended.

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<tr>
<td>GB 04/159</td>
<td>Thursday 08-10</td>
<td>20/10/2015</td>
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Course description:
The aim of the class is to present and analyse different trajectories of development of civil societies in three East Asian countries. During the class we will discuss historical development of civil societies in China, Japan and (South) Korea starting from the late 19th/early 20th century, with special emphasis on the period since the 1990s, when there has been a significant boom in development of civil societies groups and organisations in the three countries.


First lecture 20.10.2015. Registration CampusOffice between 15.09.2015-21.10.2015, 12:00 o’clock at night. Logoff until 15.11.2015, 12 o’clock at night without problems.

Proofs of academic achievement: In class representation

This course is credited for „Optionalbereich“. No

Recent Developments in Japanese Domestic and Foreign Politics

Language: English

Department: East Asian Studies, Politics of East Asia
Contact: Szczepanska, Kamila, Mi 15:00-17:00 Uhr, Akafö 2.14, Kamila.Szczepanska@rub.de
Degree programme: Master
Module: Regierungen und Institutionen Ostasiens RIO
Module taught entirely in foreign language: Yes
Course type: Seminar 090352
Credit Points: 4.5
Teacher/Lecturer: Szczepanska, Kamila, Ph.D

Requirements: BA degree in political science or similar

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<tr>
<td>GBCF 04/354</td>
<td>Tuesday 12-14</td>
<td>20/10/2015</td>
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Course description:
• What are the new policy directions pushed forward by the new LDP administration? What economic and political agenda has the new PM Abe implemented domestically?
• What is the current state of relationship between Japan and its closest neighbours, i.e. South Korea and China? Where is the relationship heading and how it influences the East and South-East Asian region? How is the ‘China factor’ reflected in the policies proposed by the new administration? How the relationship between the USA and Japan has evolved under the new LDP-led administration.
• What impact, if any, had the transition of power to the LDP on Japan’s role in regional and
global governance institutions?
During the classes we will also apply theoretical approaches from political science and international relations fields to the discussed issues.

Proofs of academic achievement: In class representation

This course is credited for „Optionalbereich“. No
FACULTY OF ECONOMICS

International Finance

Language: English

Department: Assistant Professor Macroeconomics
Contact: Jun.-Prof. Dr. Sanne Hiller, Tel. +49 (0)234 32-28829, sanne.hiller@rub.de

Degree programme: Bachelor
Module: International Finance (073025)
Module taught entirely in foreign language: Yes

Course type: Lecture
Credit Points: 5 ECTS

Teacher/Lecturer: Jun.-Prof. Dr. Sanne Hiller
Requirements: principles of micro- and macroeconomics, sound mathematical skills

Room
Day, Time
Begin

HZO 50
Tuesday, 2 pm – 4 pm
12/15/2015

HGC 10
Wednesday, 12 noon – 2 pm

Course description:
This course presents the principles of modern international finance. We focus on macroeconomic issues of international economics such as the balance of payments and models of exchange rate determination. We will discuss the connection between interest rates and exchange rates and learn about exchange rate regimes. We also look into some case studies that deal with international financial crises.

Proofs of academic achievement: written examination

This course is credited for „Optionalbereich“. No

Advanced Labour Economics

Language: English

Department: Chair of Empirical Economics
Contact: Frauke Wobbe, -25341, empwifo@rub.de

Degree programme: Master
Module: Introductory Labor Economics
Module taught entirely in foreign language: Yes

Course type: Lecture & literature seminar
Credit Points: 5

Teacher/Lecturer: Dr. Ronald Bachmann (RWI)
Requirements: Advanced knowledge of economic theory and microeconometrics is required; knowledge of labor economics is useful, so having taken the course “Labor economics” by Prof. Bauer is recommended.
Course description:
The aims of this lecture / literature seminar are (i) to understand current labour market models, in particular the search and matching model of the labour market; (ii) to be able to assess the empirical validity of these models; (iii) to explore how these models can help in explaining labour market features such as the cyclicity of unemployment and the impact of institutions on employment and unemployment rates; (iv) acquire in-depth knowledge of one scientific article, (v) briefly summarize this article, and present the article to the other students.
The first part of the lecture will therefore offer an introduction to these models. The second part of the lecture will deal with scientific articles, both theoretical and empirical, examining specific topics in this context. Every student will be assigned one article, which he/she will summarize in 2 pages, as well as present the paper to the other students.

Proofs of academic achievement: 50% exam, 20% paper summary (2 pages), 20% presentation (20 minutes), 10% involvement in discussion

This course is credited for „Optionalbereich“. No

Economics of Migration

Language: English

Department: Chair of Empirical Economics
Contact: Frauke Wobbe, -25341, empwifo@rub.de
Degree programme: Master
Module: Economics of Migration
Module taught entirely in foreign language: Yes
Course type: Lecture and literature seminar
Credit Points: 5
Teacher/Lecturer: Prof. Dr. Thomas Bauer
Requirements: Advanced knowledge of empirical research and/or econometrics is required.

Course description:
Whether immigration can solve the problems connected to the demographic change, the problem of the economic and social integration of immigrants or whether the EU-enlargement will lead to dramatic East-West migration flows are very important topics on the political agenda in almost all developed countries and source of heated public debates. This module aims to introduce the participants to the economics of migration. In a basic lecture, the participants are introduced to the basic theoretical and empirical concepts of the three main topics of the economics of migration: (i) the migration decision; (ii) the economic and social integration of migrants; and (iii) the economic effects of migration on natives. The students will then be assigned to present major
publications on the economics of migration in order to deepen the knowledge obtained through the lecture.

**Proofs of academic achievement:** 50% homework, 50% presentation

**This course is credited for „Optionalbereich“.** No

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**Foundations of International Trade**

**Language:** English

**Department:** Chair of International Economics

**Contact:** Prof. Dr. Matthias Busse, Tel. +49 (0)234 32-28902, iwb@rub.de

**Degree programme:** Bachelor

**Module:** Foundations of International Trade (073018)

**Module taught entirely in foreign language:** Yes

**Course type:** Lecture

**Credit Points:** 5 ECTS

**Teacher/Lecturer:** Prof. Dr. Matthias Busse / Dr. Joscha Beckmann

**Requirements:** Principles of micro- and macroeconomics (Grundlagen der Mikro- und Makroökonomik).

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<td>HZO 80</td>
<td>Tuesday, 4 pm – 6 pm</td>
<td>10/20/2015</td>
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**Course description:**
The course provides an introductory study of international trade theory and policy. We begin with a presentation of various fundamental trade models that explain the reason for and basic impact of international trade, such as the Ricardian and the Heckscher-Ohlin models. Also covered are economies of scale and its impact on trade. In the second part, the effects of trade policies on growth, welfare and poverty are introduced and critically examined. In the final part of the course, we will analyze the role of international organizations that matter for international trade, such as the World Trade Organization.

**Proofs of academic achievement:** written examination

**This course is credited for „Optionalbereich“.** No

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**International Macroeconomics**

**Language:** English

**Department:** Chair of International Economics

**Contact:** Prof. Dr. Matthias Busse, Tel. +49 (0)234 32-28902, iwb@rub.de

**Degree programme:** Master

**Module:** International Macroeconomics (075025)

**Module taught entirely in foreign language:** Yes
Course type: Lecture
Credit Points: 5 ECTS
Teacher/Lecturer: Prof. Dr. Matthias Busse / Dr. Joscha Beckmann

Requirements: Prior coursework in international economics, e.g., the module „International Trade“

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<td>HZO 50</td>
<td>Tuesday, 2 pm – 4 pm</td>
<td>10/20/2015</td>
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<td>HGC 10</td>
<td>Wednesday, 12 noon – 2 pm</td>
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Course description:
This module offers a broad and advanced study of international monetary economics. The theory presented covers a comprehensive range of topics including exchange rate determination, monetary and fiscal policies in open economies and an introduction to international financial institutions. International financial markets and institutions affect everyday life, involve very large flows of funds, and influence the production of goods and services of almost every single country. The insights provided by the theoretical frameworks will enable students to discuss topics related to international financial markets such as the single currency in Europe.

Proofs of academic achievement: written examination

This course is credited for „Optionalbereich“. No

Introductory Labor Economics

Language: English

Department: Chair of Empirical Economics
Contact: Frauke Wobbe, -25341, empwifo@rub.de
Degree programme: Bachelor
Module: Introductory Labor Economics
Module taught entirely in foreign language: Yes
Course type: Lecture
Credit Points: 5
Teacher/Lecturer: Prof. Dr. Thomas Bauer

Requirements: Basic knowledge in microeconomics is required

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<tr>
<td>HGC 40</td>
<td>Tuesday, 10.00-12.00</td>
<td>27.10.2015</td>
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Course description:
The labor market affects the welfare of every individual directly. Hence, the analysis of labor markets is of importance and interest not only to economists but to the population at large. Labor economics is a very challenging and a stimulating area in economics due to the special characteristics of the labor market. For example, different to capital, workers are not commodities with fixed characteristics and make decisions about the nature of their participation in the labour market. Institutions affect the labour market much more than any other market.
The aim of this module is to give a basic understanding of the distinctive features of labour markets and the ways in which they operate. Among other things, we will analyse labor supply, labor demand, human capital, labor mobility, the wage structure, discrimination, trade unions, and incentive pay. Throughout the module, we attempt to integrate theoretical issues and empirical evidence, and to address questions of policy. The latter will concentrate on German issues.

Proofs of academic achievement: written exam

This course is credited for „Optionalbereich“. No

Seminar in International Economics

Language: English

Department: Chair of International Economics
Contact: Prof. Dr. Matthias Busse, Tel. +49 (0)234 32-28902, iwb@rub.de
Degree programme: Master
Module: Seminar in International Economics (075113)
Module taught entirely in foreign language: Yes
Course type: Seminar
Credit Points: 5 ECTS
Teacher/Lecturer: Prof. Dr. Matthias Busse / Dr. Joscha Beckmann
Requirements: Prior coursework in international economics, e.g., the module „International Trade“

Room | Day, Time | Begin |
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GC 03/46 | Friday 01/15/2016 and Saturday 01/16/2016 | Introductory session 10/22/2015 4 pm – 6 pm (Room GC 03/42)
8 am - 6 pm |

Course description:
This seminar analyses theoretical models and examines current policy topics related to the international economy. The main goals are (1) to develop analytical tools to understand the causes and consequences of global economic integration, (2) to examine empirical evidence on how the globalisation of markets for capital, goods and services affects macroeconomic performance in developed and developing economies, and (3) to assess the choices available to countries regarding fiscal, monetary, trade, technology and other policies.
Depending on the main focus of the seminar, a role playing game on international trade negotiations might be part of the seminar.

Proofs of academic achievement: written examination

This course is credited for „Optionalbereich“. No
Seminar in Microeconometrics

**Language:** English

**Department:** Chair of Empirical Economics  
**Contact:** Frauke Wobbe, -25341, empwifo@rub.de  
**Degree programme:** Master  
**Module:** Labor Economics  
**Module taught entirely in foreign language:** Yes  
**Course type:** Seminar  
**Credit Points:** 10  
**Teacher/Lecturer:** Prof. Dr. Thomas Bauer  
**Requirements:** Knowledge of microeconomics is required. Prior coursework in the B.Sc. module "Grundlagen der Empirischen Wirtschaftsforschung" is recommended.

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<tr>
<td>GBCF 04/252</td>
<td>Monday, 14.00-18.00</td>
<td>19.10.2015</td>
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**Course description:**  
This module deals with the econometric analysis of micro data. The first lectures will review the basic econometric methods and introduce the participants into the software package STATA. Afterwards, the students work on their own empirical project. As part of this project, the students review the relevant literature, identify their research question, prepare the underlying data, and empirically analyze the data by applying basic and advanced econometric methods. The results of the projected are presented to the class and documented in a term paper.

**Proofs of academic achievement:** 50% term paper, 30% presentations, 20% involvement in discussions

**This course is credited for „Optionalbereich“. No**

Market- and Non-Market Valuation of Environmental Goods

**Language:** English

**Department:** Energy Economics and Applied Econometrics  
**Contact:** Christiane Brüggemann, 02 01/ 81 49-234, brueggemann@rwi-essen.de  
**Degree programme:** Master  
**Module:** Market- and Non-Market Valuation of Environmental Goods  
**Module taught entirely in foreign language:** Yes  
**Course type:** Block Seminar  
**Credit Points:** 5  
**Teacher/Lecturer:** Prof. Dr. Manuel Frondel  
**Requirements:** Bachelor's Degree in Economics, Knowledge in Empirical Economics Research and/or Econometrics

| Room       | Day, Time   |
|------------|-------------|---------|
|            |             |         |
Course description:
The valuation of environmental goods and amenities is often complicated by the lack of market prices. This seminar will deal with distinct empirical methods to estimate the value of environmental goods and amenities. Methods to be covered include both market and non-market valuation methods, such as hedonic pricing, contingent valuation and revealed preference methods to elicit willingness-to-pay.

Proofs of academic achievement: written paper and oral examination

This course is credited for „Optionalbereich“. No

Management Game „General Management“

Language: English

Department: Institute of Management
Contact: Dr. Martin Seidler, +49 (0)234 32-22235, Martin.Seidler@rub.de
Degree programme: Bachelor Management and Economics
Module: Management Game “General Management”
Module taught entirely in foreign language: Yes
Course type: management game
Credit Points: 5
Teacher/Lecturer: Prof. Dr. Brigitte Werners/Dr. Martin Seidler
Requirements: Knowledge of the modules „Kostenrechnung“, (cost accounting) „Jahresabschluss“ (financial accounting) and „Finanzierung und Investition“ (finance and investment)

Room
GC 4/50

Day, Time
Introductory session:
Friday 23rd of October,
10.00-11.30 am

Begin
23/10/2015

Course description:
The management game models structure and functions of industrial companies. Participants represent the boards of directors and have to make decisions in all fields of management. The groups are in competition with each other and have to cope with challenging scenarios. The students are supposed to handle complex problems and to make group-decisions under uncertainty and time pressure. Thus they get to know interdependencies of different aspects of management while acting together in small groups and having fun in learning.

Proofs of academic achievement: Written examination

This course is credited for „Optionalbereich“. No
Econometrics

Department: Statistics and Econometrics
Contact: Janosch Kellermann, janosch.kellermann@rub.de
Degree programme: Master
Module: Econometrics
Module taught entirely in foreign language: Yes
Course type: Lecture
Credit Points: 10
Teacher/Lecturer: Prof. Dr. Vasyl Golosnoy

Requirements: Undergraduate courses in Statistics and Econometrics

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<tr>
<td>tba</td>
<td>Monday 10.00 – 11.30</td>
<td>Oct 19, 2015</td>
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<td>Monday 8.15 – 9.45</td>
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Course description:
This course serves as an introduction to econometrics at graduate level and concentrates primarily on the linear regression model, its estimation, inference and diagnostics. A short introduction to time series analysis concludes the course.

Proofs of academic achievement: Written examination

This course is credited for „Optionalbereich“. No

Financial Econometrics

Department: Statistics and Econometrics
Contact: Janosch Kellermann, janosch.kellermann@rub.de
Degree programme: Master
Module: Financial Econometrics
Module taught entirely in foreign language: Yes
Course type: Lecture
Credit Points: 10
Teacher/Lecturer: Prof. Dr. Vasyl Golosnoy

Requirements: at least one graduate course in econometrics

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<tr>
<td>tba</td>
<td>Tuesday 10.00 – 11.30</td>
<td>Oct 20, 2015</td>
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<td>Tuesday 8.15 – 9.45</td>
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Course description:
This course provides a review of empirical methods applied in the quickly growing field of financial econometrics. The course concentrates on describing and modelling stylized facts found in return and volatility time series. The important financial models (CAPM, APT) are discussed from the empirical point of view as well.

Proofs of academic achievement: Written examination

This course is credited for „Optionalbereich“. No
Private and anonymous Communication

**Department:** Arbeitsgruppe Informationssicherheit  
**Contact:** Prof. Dr. Christina Pöpper, Christina.poepper@rub.de, 27391  
**Degree programme:** Master  
**Module:** IT-Sicherheit  
**Module taught entirely in foreign language:** Yes  
**Course type:** Lecture with tutorials  
**Credit Points:** 5  
**Teacher/Lecturer:** Prof. Dr. Christina Pöpper  
**Requirements:** none

**Room**  
- ID 04/471  
- ID 2/167

**Day, Time**  
- Tuesday 10:15-11:45 (lecture)  
- Thursday 14:15-15:45 (tutorial)

**Begin:** 20/10/2015

**Course description:**  
The focus of this course are privacy-enhancing technologies and anonymity techniques. Central elements are privacy metrics and techniques, vulnerabilities and attack mechanisms as well as detection, protection, and prevention techniques. The course will cover techniques for anonymous communication and browsing (e.g., Tor), anonymity in electronic payment systems (e.g., E-Cash, Bitcoin), steganographic and censorship circumvention techniques, communication hiding, and location privacy. The course may also cover special topics such as electronic voting or privacy in social networks.

**Proofs of academic achievement:** Written exam

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

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**Master Project Virtual Prototyping of embedded Systems**

**Department:** Eingebettete Systeme der Informationstechnik  
**Contact:** Prof. Dr. Michael Hübner, Michael.Huebner@rub.de  
**Degree programme:** Master  
**Module:** IT-Sicherheit, Elektrotechnik und Informationstechnik  
**Module taught entirely in foreign language:** Yes  
**Course type:** Project  
**Credit Points:** 3  
**Teacher/Lecturer:** Prof. Dr. Michael Hübner
Room
ID 1/103

Day, Time
Wednesday from 16:15
(kick-off meeting)

Begin
21/10/2015

Course description:
Within the project’s scope, the methods of “Virtual Prototyping” are taught and reinforced with practical examples.

– Introduction to Virtual Prototyping - Basic concepts, systems, tools, languages, etc.
– SystemC basics - Cadence iSL SystemC course.
– Fast processor models: OVP
– Cadence Virtual System Platform
– Processor design: ArchC
– Cache Modeling: Alpha-Sim + CACTI - Cache Size Tradeoff

Proofs of academic achievement: Continual assessment

This course is credited for „Optionalbereich“. Yes

Master Project Advanced Optics 2

Language: English

Department: Photonik und Terahertztechnology
Contact: Prof. Dr. Martin Hofmann, 22259, martin.hofmann@rub.de

Degree programme: Master
Module: Lasers and Photonics, Elektrotechnik und Informationstechnik
Module taught entirely in foreign language: Yes
Course type: Project
Credit Points: 3
Teacher/Lecturer: Prof. Dr. Martin Hofmann

Requirements: none

Room
ID 1/168

Day, Time
Wednesday from 12:30
(kick-off meeting)

Begin
21/10/2015

Course description:
It will be worked on a topic related to current research activities. Exemplary topics are holography, interferometry and short pulse generation. The project takes place as block course on appointment.

Proofs of academic achievement: continual assessment

This course is credited for „Optionalbereich“. Yes
Methods and Instruments of technology Management

Language: English

Department: Photonic und Terahertztechnologie
Contact: Prof. Dr. Martin Hofmann, martin.hofmann@rub.de, 22259
Degree programme: Master
Module: Lasers and Photonics
Module taught entirely in foreign language: Yes
Course type: Lecture with integrated tutorials
Credit Points: 5
Teacher/Lecturer: Dr. Josef Gochermann
Requirements: None

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<td>ID 03/463</td>
<td>Wednesday 10:15-11:45</td>
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<td>Wednesday 12:15-13:45</td>
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Course description:

Proofs of academic achievement: Oral examination

This course is credited for „Optionalbereich“. Yes

Optoelectronics

Language: English/

Department: Photonic und Terahertztechnologie
Contact: Priv.-Doz. Dr.-Ing. Nils C. Gerhardt, nils.gerhardt@rub.de, 26514
Degree programme: Master
Module: Lasers and Photonics
Module taught entirely in foreign language: Yes
Course type: Lecture with tutorials
Credit Points: 6
Teacher/Lecturer: Priv.-Doz. Dr.-Ing. Nils C. Gerhardt
Requirements: none

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<td>ID 05/158</td>
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<td>Thursday 14:15-16:00</td>
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Course description:

At first, the basic principles of semiconductors (lattice structure, band structure, doping) are introduced. In the second chapter, the elementary interactions between light and semiconductors
are addressed. The third chapter contains the p-n-junction and hetero junctions. Then, the most important devices: solar cells, photodiodes, light emitting diodes, and semiconductor lasers are discussed in separate chapters. New devices like modulators and optical switches are referred to in the second last chapter and the last chapter consists of an overview about organic optoelectronics.

Proofs of academic achievement: Oral examination

This course is credited for „Optionalbereich“. Yes

# Photovoltaics

Language: English

**Department**: Photonic und Terahertztechnologie  
**Contact**: Prof. Dr. Martin R. Hofmann, marin.hofmann@rub.de, 22259  
**Degree programme**: Master  
**Module**: Lasers and Photonics, Elektrotechnik und Informationstechnik  
**Module taught entirely in foreign language**: Yes  
**Course type**: Lecture with integrated tutorials  
**Credit Points**: 3  
**Teacher/Lecturer**: Dr.-Ing. Dietmar Borchert  
**Requirements**: none

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<td>ID 04/232</td>
<td>Wednesday from 13:15</td>
<td>21/10/2015</td>
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<td>(kick-off meeting)</td>
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**Course description:**  
Content overview:  
- The sun as energy source  
- Basics of semiconductor physics  
- Operating principle of a solar cell  
- Solar cell materials  
- Production technologies  
- Cell concepts  
- Module technology  
- Grid connected systems  
- Stand-alone PV systems

Proofs of academic achievement: Written exam

This course is credited for „Optionalbereich“. Yes

# Scientific Working

Language: English

**Department**: Photonic und Terahertztechnologie
Contact: Prof. Dr. Martin Hofmann, martin.hofmann@rub.de, 22259

Degree programme: Bachelor

Module: IT-Sicherheit, Elektrotechnik und Informationstechnik
Module taught entirely in foreign language: Yes

Course type: Lecture with tutorials

Credit Points: 2

Teacher/Lecturer: Dr.-Ing Carsten Brenner

Requirements: none

Room | Day, Time | Begin
ID 03/471 | Tuesdays 10:15-11:45 | 20/10/2015

Course description:

Proofs of academic achievement: continual assessment

This course is credited for „Optionalbereich“. Yes

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Terahertz Technology

Language: English

Department: Photonic und Terahertztechnologie

Contact: Prof. Dr. Martin Hofmann, martin.hofmann@rub.de, 22259

Degree programme: Master

Module: Lasers and Photonics, Elektrotechnik und Informationstechnik
Module taught entirely in foreign language: Yes

Course type: Lecture with integrated tutorials

Credit Points: 4

Teacher/Lecturer: Dr.-Ing. Carsten Brenner

Requirements: none

Room | Day, Time | Begin
ID 05/158 | Monday 09:15-11:45 | 19/10/2015

Course description:

For a long time the generation of THz radiation was a major issue. In the past 20 years the possible approaches to generation and detection of THz radiation have evolved. The lecture gives an overview over radiation in this spectral region and its possible applications. Main focus of the lecture are concepts for THz generation that are based on optical principles (quantum cascade lasers, gas and pulse lasers) as well as electronic means (mixers, tunnel diodes, superconducting contacts). Special attention is paid to time domain spectroscopy which has become a commercially available technology in the past few years.

Proofs of academic achievement: Oral examination

This course is credited for „Optionalbereich“. Yes
Fundamentals of GPU Programming

**Department:** Theoretische Elektrotechnik  
**Contact:** Dr. Denis Eremin, 29471, eremin@tet.rub.de  
**Degree programme:** Master  
**Module:** IT-Sicherheit, Elektrotechnik und Informationstechnik  
**Module taught entirely in foreign language:** Yes  
**Course type:** Lecture with tutorials  
**Credit Points:** 4  
**Teacher/Lecturer:** Dr. Denis Eremin  
**Requirements:** none  

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| ID 04/401 | Thursday 16:15-17:45 (lecture) | 22/10/2015  
|         | Thursday 17:45-18:30 (tutorial) |              |

**Course description:**  
1. GPU as a modern means for general-purpose massively parallel computations  
2. General GPU architecture and CUDA operational model  
3. Basic CUDA syntax  
4. Optimization strategies in GPU programming  
5. Case study of general-purpose GPU programming

**Proofs of academic achievement:** Oral examination  

This course is credited for „Optionalbereich“. Yes

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Numerical Plasma Simulation

**Department:** Theoretische Elektrotechnik  
**Contact:** Prof. Dr. Ralf Peter Brinkmann, brinkmann@tet.rub.de, 26336  
**Degree programme:** Master  
**Module:** Elektrotechnik und Informationstechnik  
**Module taught entirely in foreign language:** Yes  
**Course type:** Lecture with tutorials  
**Credit Points:** 4  
**Teacher/Lecturer:** Dr. Jan van Dijk  
**Requirements:** none  

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<tr>
<td>ID 1/136</td>
<td>Wednesday from 14:15 (kick-off meeting)</td>
<td>21/10/2015</td>
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Course description:
In order to understand and improve plasma sources, numerical simulation has become an invaluable addition to experiments in the past decades. At present, time-dependent three-dimensional codes in which all relevant plasma features are dealt with self-consistently are starting to appear.

Proofs of academic achievement: Oral examination

This course is credited for „Optionalbereich“. Yes
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

Module: 170096 Microeconomics of Competitiveness: Firms, Clusters and Economic Development

Module taught entirely in foreign language: Yes

Course type: Seminar

Credit Points: 6

Teacher/Lecturer: Prof. Dr. Matthias Kiese, N.N.

Requirements: M.Sc. students in Geography, Master and PhD students from other programmes (esp. Political Science, Economics, Management Studies, International Development)

Room

NA 01/130

Day, Time

Monday, 14.00 – 17.00

Begin

19.10.2015

Course description:

Microeconomics of Competitiveness (MOC) is a graduate course created by Professor Michael E. Porter at Harvard Business School. The course explores the determinants of competitiveness and economic development from a bottom-up, microeconomic perspective. The sophistication and productivity of firms, the vitality of clusters, and the quality of the business environment are the ultimate determinants of a nation's or region's productivity. Adopting Harvard's trademark case study method, each session deals with a particular company, region or country case to investigate the drivers of competitiveness.

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“. Yes

Biomineralization

Language: English

Department: Institute of Geology, mineralogy and geophysics

Contact: Thomas Fockenberg, Tel.: 0234/32-24392, e-mail. Thomas.fockenberg@rub.de

Degree programme: Master

Module: n.s.

Module taught entirely in foreign language: Yes
Course type: lecture
Credit Points: 3
Teacher/Lecturer: Prof. Dr. Adrian Immenhauser
Requirements: B.Sc. in earth sciences or similar background.

Room | Day, Time | Begin
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Please contact the lecturer | | 18/10/2013

Course description:
This advanced M.Sc. course deals with all aspects of bio-induced and biologically controlled mineralisation. Whereas we deal with a number of biominerals, the focus is on carbonate and silica minerals. The fundamentals of biomineralisation are discussed. After a general introduction including the changes of the ambient seawater chemistry through time, we deal with aspects such as membranes and ion channels. Another topic of interest includes microbes as biomineralisers. In the second part of this course, the focus is on a number of organisms including corals, bivalves, foraminifera and coccoliths. The students contribute actively to the teaching and read and discuss papers. The course material is available on Blackboard.

Proofs of academic achievement: Oral presentation and written examination

This course is credited for „Optionalbereich“. No

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Dynamics of the Earth I

Language: English

Department: Institute of Geology, mineralogy and geophysics
Contact: Thomas Fockenberg, Tel.: 0234/32-24392, e-mail. Thomas.fockenberg@rub.de
Degree programme: Master
Module: n.s.
Module taught entirely in foreign language: Yes
Course type: lecture
Credit Points: 5
Teacher/Lecturer: Prof. Dr. Wolfgang Friederich
Requirements: B.Sc. in earth sciences or similar background,

Room | Day, Time | Begin
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Please contact the lecturer | | 

Course description:
State functions of minerals at high pressure-temperature conditions; Kinetics of lattice defects, deformation mechanisms at high temperatures, Transportation of energy and temperatures distribution in the Earth`s interior; Tomography of the Earth

Proofs of academic achievement: written examination

This course is credited for „Optionalbereich“. No
Exercises in microfabrics

**Department:** Institute of Geology, mineralogy and geophysics  
**Contact:** Thomas Fockenberg, Tel.: 0234/32-24392, e-mail. Thomas.fockenberg@rub.de  
**Degree programme:** Master  
**Module:** n.s.  
**Module taught entirely in foreign language:** Yes  
**Course type:** practical course  
**Credit Points:** 3  
**Teacher/Lecturer:** Prof. Dr. Bernhard Stöckhert  
**Requirements:** B.Sc. in earth sciences or similar background, particularly skills in polarization microscopy, crystallography and petrology

**Course description:**
Application of the background acquired in the course "Microfabrics" to the interpretation of natural rocks (thin sections, polarizing microscopy); experiments with analogue materials.

**Proofs of academic achievement:** written examination

**This course is credited for „Optionalbereich“:** No

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Geodynamics I

**Department:** Institute of Geology, mineralogy and geophysics  
**Contact:** Thomas Fockenberg, Tel.: 0234/32-24392, e-mail. Thomas.fockenberg@rub.de  
**Degree programme:** Master  
**Module:** n.s.  
**Module taught entirely in foreign language:** Yes  
**Course type:** lecture  
**Credit Points:** 5  
**Teacher/Lecturer:** Prof. Dr. Jörg Renner  
**Requirements:** B.Sc. in earth sciences or similar background.

**Course description:**
Equations of state for minerals at temperatures and pressures prevailing in the Earth’s interior; defects in crystals (point, linear, planar): their geometrical characteristics and kinetics; deformation mechanisms at high homologous temperatures (dislocation and diffusion creep); melt migration. Aim: Familiarize with theoretical concepts of solid state physics and
Global tectonics

**Language:** English

**Department:** Institute of Geology, mineralogy and geophysics

**Contact:** Thomas Fockenberg, Tel.: 0234/32-24392, e-mail. Thomas.fockenberg@rub.de

**Degree programme:** Master

**Module:** n.s.

**Module taught entirely in foreign language:** Yes

**Course type:** lecture

**Credit Points:** 3

**Teacher/Lecturer:** Prof. Dr. Bernhard Stöckhert

**Requirements:** B.Sc. in earth sciences or similar background.

**Course description:**

Introduction to large scale tectonics and selected problems, including kinematics of plate motion, plate boundary zones, length and time scales of deformation, properties of crust and lithosphere. Emphasis is on the integration of geological, geophysical, petrologic and geodetic concepts and information. In particular, a solid background in geophysics and petrology (on the Bachelor level at minimum) is prerequisite.

**Proofs of academic achievement:** written examination

**This course is credited for „Optionalbereich“.** No

Groundwater Hydraulics

**Language:** English

**Department:** Institute of Geology, mineralogy and geophysics

**Contact:** Thomas Fockenberg, Tel.: 0234/32-24392, e-mail. Thomas.fockenberg@rub.de

**Degree programme:** Master

**Module:** n.s.

**Module taught entirely in foreign language:** Yes

**Course type:** lecture

**Credit Points:** 6

**Teacher/Lecturer:** Jun.-Prof. Dr. Andreas Englert

**Requirements:** B.Sc. in earth sciences or similar background, knowledge in hydrogeology
Course description:
basic groundwater hydraulics, small scale measurements (darcy test .......), large scale
measurements (pumping test .......), analysis of hydraulic tests, characterization of heterogeneous
aquifer systems

Proofs of academic achievement: written examination

This course is credited for „Optionalbereich“. No

Inorganic hydrochemistry

Language: English

Department: Institute of Geology, mineralogy and geophysics
Contact: Thomas Fockenberg, Tel.: 0234/32-24392, e-mail. Thomas.fockenberg@rub.de
Degree programme: Master
Module: n.s.
Module taught entirely in foreign language: Yes
Course type: lecture
Credit Points: 6
Teacher/Lecturer: Prof. Dr. Frank Wisotzky
Requirements: B.Sc. in earth sciences or similar background, especially in hydrogeology and
basics in hydrochemistry

Room Day, Time Begin
Please contact the lecturer

Course description:
The course comprised hydrochemical reactions in aquifers like dissolution/precipitation, acid-
base-reactions, redox-reactions, gas-water-reactions, complexformation and hydrochemical
calculations. In the course the use of the computer code PHREEQC is explained and will be
trained. Different applications in water technology and water treatment are described.

Proofs of academic achievement: written examination

This course is credited for „Optionalbereich“. No

Isotope geochemistry- principles and applications with exercises

Language: English

Department: Institute of Geology, mineralogy and geophysics
Contact: Thomas Fockenberg, Tel.: 0234/32-24392, e-mail. Thomas.fockenberg@rub.de
Degree programme: Master
Module: n.s.
Module taught entirely in foreign language: Yes
Course type: lecture with exercises
Credit Points: 7
Teacher/Lecturer: Dr. Dieter Buhl / Dr. Andrea Niedermayr
Requirements: B.Sc. in earth sciences or similar background.

Room Day, Time Begin
Please contact the lecturer

Course description:
Stable isotopes represent important tools to investigate the processes and factors which control climate and biogeochemical cycling today as well as in the distant past. The aim of this M.Sc. course is to provide an overview on the most common geochemical indicators currently in use for the reconstruction of past environmental conditions (e.g. ocean temperatures, circulation, ecosystem productivity, atmospheric pCO2) and of biogeochemical cycling. Following a short introduction on stable isotopes and up-to-date analytical techniques, the operation mode of the major biogeochemical cycles (C, N, S, H) and their interaction with the hydrosphere, atmosphere, bio- and lithosphere will be discussed.

Proofs of academic achievement: written examination

This course is credited for „Optionalbereich“. No

Lectures in Microfacrics

Language: English

Department: Institute of Geology, mineralogy and geophysics
Contact: Thomas Fockenberg, Tel.: 0234/32-24392, e-mail. Thomas.fockenberg@rub.de
Degree programme: Master
Module: n.s.
Module taught entirely in foreign language: Yes
Course type: lecture
Credit Points: 4
Teacher/Lecturer: Prof. Dr. Bernhard Stöckhert
Requirements: B.Sc. in earth sciences or similar background,

Room Day, Time Begin
Please contact the lecturer

Course description:
The course deals with all aspects of microfabric evolution, crystallographic orientation, interfaces, crystal defects, deformation mechanisms, rheology of polycrystalline materials, with emphasis on the interpretation of the microstructural record of rocks.

Proofs of academic achievement: written examination

This course is credited for „Optionalbereich“. No
Lectures, seminars, exercises in structural geology

**Language:** enlist

**Department:** Institute of Geology, mineralogy and geophysics

**Contact:** Thomas Fockenberg, Tel.: 0234/32-24392, e-mail. Thomas.fockenberg@rub.de

**Degree programme:** Master

**Module:** n.s.

Module taught entirely in foreign language: Yes

**Course type:** lecture

**Credit Points:** 4

**Teacher/Lecturer:** Prof. Dr. Christophe Pascal

**Requirements:** B.Sc. in earth sciences or similar background

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**Course description:**

The aim of the lecture is to consolidate and deepen fundamental aspects in structural geology already introduced in the BSc lecture “Grundlagen der Strukturgeologie”. The sessions are devoted to oral presentations by the students. The topics to be presented are selected by the participants in agreement with a list of scientific papers proposed by the instructor. In addition, the writing of an essay following the oral presentation is required.

**Proofs of academic achievement:** oral presentation/essay

This course is credited for „Optionalbereich“. No

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**Magmatism**

**Language:** English

**Department:** Institute of Geology, mineralogy and geophysics

**Contact:** Thomas Fockenberg, Tel.: 0234/32-24392, e-mail. Thomas.fockenberg@rub.de

**Degree programme:** Master

**Module:** n.s.

Module taught entirely in foreign language: Yes

**Course type:** lecture

**Credit Points:** 3

**Teacher/Lecturer:** Prof. Dr. Bernhard Stöckhert

**Requirements:** B.Sc. in earth sciences or similar background,

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**Course description:**
The course deals with the properties of silicate melts, magma generation and ascent, volcanic processes and products, volcanic hazards, volcano monitoring, magma chambers and magmatic conduits.

**Proofs of academic achievement:** written examination

**This course is credited for „Optionalbereich“. No**

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### Micropalaeontology

**Language:** English

**Department:** Institute of Geology, mineralogy and geophysics

**Contact:** Thomas Fockenberg, Tel.: 0234/32-24392, e-mail. Thomas.fockenberg@rub.de

**Degree programme:** Master

**Module:** n.s.

**Module taught entirely in foreign language:** Yes

**Course type:** Lecture and practical work

**Credit Points:** 4

**Teacher/Lecturer:** Prof. Dr. Jörg Mutterlose

**Requirements:** B.Sc. in earth sciences or similar background, knowledge in paleontology and stratigraphy

**Room**

Please contact the lecturer

**Day, Time**

**Begin**

**Course description:**

The course gives an overview of the various groups of microorganisms (dinoflagellates, calcareous nannofossils, diatoms, foraminifera, radiolarians, ostracods) widely used in marine geology, oceanography, ecology and oil geology. Each group will be addressed with respect to its taxonomy, ecology and paleoceanography. Special emphasis is being paid to the stratigraphic applications of these groups. Half of the time is devoted to practical exercises studying the groups under the microscope.

**Proofs of academic achievement:** written examination

**This course is credited for „Optionalbereich“. No**

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### Paleoclimatology and climate change

**Language:** English

**Department:** Institute of Geology, mineralogy and geophysics

**Contact:** Thomas Fockenberg, Tel.: 0234/32-24392, e-mail. Thomas.fockenberg@rub.de

**Degree programme:** Master

**Module:** n.s.

**Module taught entirely in foreign language:** Yes

**Course type:** lecture
Credit Points: 2
Teacher/Lecturer: Jun.-Prof. Dr. Ola Kwiecien
Requirements: B.Sc. in earth sciences or similar background,

Course description:
Climate change, a theme of global social and economic significance is widely discussed in media. Most attention is paid to the issue of global warming, regarding its nature, causes, and consequences. Human impact on climate is a subject of particularly hot debates. In order to understand recent changes and forecast the future ones we need to comprehend factors forcing Earth’s climate. The only way to achieve this goal is investigating the climate of the past. Here two aspects play crucial role: different time scales (tectonic, orbital, and centennial) and internal feedbacks between different components of a climate system (cryosphere, atmosphere, hydrosphere, and biosphere). Anchored in this context the curse will focus on information which can be teased out from different climatic archives (ice cores, marine and lacustrine sediments, speleothems, corals, tree rings) by the use of different proxies (stable isotopes, biomarkers, elemental and mineral composition, faunal assemblages, growth rate).

Proofs of academic achievement: written examination

This course is credited for „Optionalbereich“. No

Petroleum geology

Language: English

Department: Institute of Geology, mineralogy and geophysics
Contact: Thomas Fockenberg, Tel.: 0234/32-24392, e-mail. Thomas.fockenberg@rub.de
Degree programme: Master
Module: n.s.
Module taught entirely in foreign language: Yes
Course type: lecture
Credit Points: 1
Teacher/Lecturer: Dr. Olaf Podlaha
Requirements: B.Sc. in earth sciences or similar background.

Course description:

Proofs of academic achievement: Written examination

This course is credited for „Optionalbereich“. No
Petrology of igneous rocks

Language: English

Department: Institute of Geology, mineralogy and geophysics

Contact: Thomas Fockenberg, Tel.: 0234/32-24392, e-mail. Thomas.fockenberg@rub.de

Degree programme: Master

Module: n.s.

Module taught entirely in foreign language: Yes

Course type: lecture with practicals

Credit Points: 6

Teacher/Lecturer: Prof. Dr. Sumit Chakraborty

Requirements: B.Sc. in earth sciences or similar background, knowledge in polarization microscopy

Room

Day, Time

Begin

Please contact the lecturer

Course description:

Learning the tools used in Igneous Petrology. These include petrography, phase diagrams, textures, chemical data handling, trace elements, basic introduction to isotopes etc. Basic processes involved in melt generation and differentiation. Interpreting igneous rocks to infer their genetic histories (Examples from typical settings e.g. MORB, Magmatism at convergent boundaries, Granitoids). An important component of the interpretations will be to address the "source vs. process" question. Lectures will be accompanied by practicals using hand specimens and thin sections, as well as calculations using petrological and chemical data.

Proofs of academic achievement: written examination

This course is credited for „Optionalbereich“. No

Project in igneous petrology

Language: English

Department: Institute of Geology, mineralogy and geophysics

Contact: Thomas Fockenberg, Tel.: 0234/32-24392, e-mail. Thomas.fockenberg@rub.de

Degree programme: Master

Module: n.s.

Module taught entirely in foreign language: Yes

Course type: seminar

Credit Points: 4

Teacher/Lecturer: Prof. Dr. Sumit Chakraborty

Requirements: B.Sc. in earth sciences or similar background.

Room

Day, Time

Begin

Please contact the lecturer
**Course description:**
This will involve the detailed study of one coherent suite of rocks from a given setting. This course uses the tools learned in petrology of igneous rocks and can be considered to be an advanced handling of the former. The study will involve reading and critically analyzing the relevant literature, studying the rocks in hand specimen and thin sections, and calculations using chemical data from these rocks. The goal is to understand the development of a model for the origin of the rocks using data of different kinds. The rock suites may come from the petrological sample collection or from various field trips of the students / teachers.

**Proofs of academic achievement:** thesis

This course is credited for „Optionalbereich“. No

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**Recent developments in analytical and experimental petrology**

Language: English

Department: Institute of Geology, mineralogy and geophysics

Contact: Thomas Fockenberg, Tel.: 0234/32-24392, e-mail. Thomas.fockenberg@rub.de

Degree programme: Master

Module: n.s.
Module taught entirely in foreign language: Yes

Course type: seminar

Credit Points: 4

Teacher/Lecturer: Prof. Dr. Sumit Chakraborty / Dr. Ralf Dohmen / Dr. Thomas Fockenberg

Requirements: B.Sc. in earth sciences or similar background

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**Course description:**
Study, with the help of advisors, of a series of papers on one topic/a set of topics over the course of the semester. The papers may focus on analytical techniques, or studies on experimental petrology. These would typically trace the evolution of a given kind of method with time, focusing on new advantages that were gained as the tools evolved.

**Proofs of academic achievement:** The grade would be based on a paper that the students submit before the end of the semester. The format would be that of a research proposal where a problem of the student’s choice is to be studied using the analytical / experimental method chosen. The student will have to justify why this method is preferred over other possible alternatives.

This course is credited for „Optionalbereich“. No

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**Social methods in structural geology I**

Language: English

Department: Institute of Geology, mineralogy and geophysics

Contact: Thomas Fockenberg, Tel.: 0234/32-24392, e-mail. Thomas.fockenberg@rub.de
Degree programme: Master
Module: n.s.
Module taught entirely in foreign language: Yes
Course type: Lecture
Credit Points: 3
Teacher/Lecturer: Prof. Dr. Christophe Pascal
Requirements: B.Sc. in earth sciences or similar background

Room | Day, Time | Begin
---|---|---
Please contact the lecturer

Course description:
Most problems in geology require the ability to predict structures in three dimensions, based on few surface outcrops and/or highly incomplete information from drill holes. Predicting three-dimensional structures at depth in many cases requires an understanding of their evolution in time. Hence, four-dimensional thinking is important to develop appropriate hypotheses and models. The lectures and a seminar introduce to the problems of prediction of underground structure in various tectonic settings, in particular those relevant for the exploration of natural resources. The exercises address the techniques and strategies in predicting structures from incomplete observation.

Proofs of academic achievement: written examination

This course is credited for „Optionalbereich“. No

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Sedimentary systems I

Language: English

Department: Institute of Geology, mineralogy and geophysics
Contact: Thomas Fockenberg, Tel.: 0234/32-24392, e-mail. Thomas.fockenberg@rub.de
Degree programme: Master
Module: n.s.
Module taught entirely in foreign language: Yes
Course type: Lecture
Credit Points: 3
Teacher/Lecturer: Prof. Dr. Adrian Immenhauser
Requirements: B.Sc. in earth sciences or similar background

Room | Day, Time | Begin
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Please contact the lecturer

18/10/2013

Course description:
This M.Sc. course deals with large-scale sedimentary systems in all its aspects. The focus is presently on carbonate factories in tropical, coolwater and mound facies. The aim is to provide students with a general understanding of processes that shape carbonate depositional environments throughout Earth history. Here we deal with topics such as platform geometries,
controlling factors of carbonate deposition, carbonate sequence stratigraphy, applied carbonate sedimentology, carbonate geochemistry, paleoceanography of carbonate systems. The students contribute actively to the teaching and read and discuss papers. The course material is available on Blackboard.

Proofs of academic achievement: Oral presentation and written examination

This course is credited for „Optionalbereich“. No

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**Theoretical geophysics II (Fluiddynamics)**

Language: English

Department: Institute of Geology, mineralogy and geophysics

Contact: Thomas Fockenberg, Tel.: 0234/32-24392, e-mail. Thomas.fockenberg@rub.de

Degree programme: Master

Module: n.s.
Module taught entirely in foreign language: Yes

Course type: lecture

Credit Points: 5

Teacher/Lecturer: Prof. Dr. Jörg Renner

Requirements: B.Sc. in earth sciences or similar background

Room  
Day, Time  
Begin
Please contact the lecturer

Course description:
Introduction (Framework and continuum’s hypothesis); Mathematical tools (properties of tensors, differentiation and integration of scalar and vectorial fields); Kinematics (Euler-and Lagrange-description, material derivative, Helmholtz theorem, velocitygradient matrix, strain rate tensor); Conservation laws (Reynolds transport Theorem, mass conservations and continuity equation, conservation of momentum and Cauchy stress and equation of motion, energy conservation); Equations of state, material equations (viscosity, flow laws); Navier-Stokes equations; Potential flow; Some applications (water waves and Tsunamis, melt segregation, etc.)

Proofs of academic achievement: written examination

This course is credited for „Optionalbereich“. No

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**Thermodynamics**

Language: English

Department: Institute of Geology, mineralogy and geophysics

Contact: Thomas Fockenberg, Tel.: 0234/32-24392, e-mail. Thomas.fockenberg@rub.de

Degree programme: Master

Module: n.s.
Module taught entirely in foreign language: Yes
Course type: lecture  
Credit Points: 8
Teacher/Lecturer: Prof. Dr. Sumit Chakraborty
Requirements: B.Sc. in earth sciences or similar background

Room | Day, Time | Begin
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Please contact the lecturer

Course description:
Introduction to thermodanics and its applications in geosciences (phase equilibria etc.). The course includes treatments of pure phases and solutions of solids and (supercritical) liquids.

Proofs of academic achievement: written examination

This course is credited for „Optionalbereich“. No

Underground excavation of rocks

Language: English

Department: Institute of Geology, mineralogy and geophysics
Contact: Thomas Fockenberg, Tel.: 0234/32-24392, e-mail. Thomas.fockenberg@rub.de
Degree programme: Master
Module: n.s.
Module taught entirely in foreign language: Yes
Course type: lecture
Credit Points: 5
Teacher/Lecturer: Prof. Dr. Michael Alber
Requirements: B.Sc. in earth sciences or similar background

Room | Day, Time | Begin
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Please contact the lecturer

Course description:

Proofs of academic achievement: written examination

This course is credited for „Optionalbereich“. No
Alternative Dispute Resolution

Department: Faculty of Law, Lehrstuhl Prof. Dr. Adelheid Puttler
Contact: Holly Wesener, e-mail: hwesener@uni-bonn.de
Degree programme: Bachelor/Master
Module: Alternative Dispute Resolution
Module taught entirely in foreign language: Yes
Course type: Lecture/workshop
Credit Points: 3
Teacher/Lecturer: Holly Wesener, J.D. LL.M.
Requirements: Prior knowledge of law, minimum English level B2

Room: TBA
Day, Time: 12th-15th October 2015, 10:00 – 12:30 and 14:00 – 16:00, 16th October 2015, 10:00 – 12:30
Begin: 12/10/2015

Course description:
This course is an introduction to the theory and practice of negotiation, mediation, arbitration and other alternative dispute resolution (ADR) mechanisms from an American perspective. Through lectures, problem-solving exercises, discussions and simulations, students will:
- understand and apply the skills and theories related to principled and competitive bargaining
- learn mediation techniques
- examine legal, ethical and policy issues that arise in the use of ADR processes in the United States.
Please confirm your registration via e-mail to Ms Wesener by 1 October 2015.

Proofs of academic achievement: Students will be evaluated on the basis of in-class exercises and quizzes.

This course is credited for „Optionalbereich“. No

Introduction à la terminologie juridique francaise

Department: Faculty of Law, Lehrstuhl Prof. Dr. Adelheid Puttler
Contact: Tobias Guth, e-mail: tobias.guth@rub.de
Degree programme: Bachelor/Master
Module: Introduction à la terminologie juridique francaise
Module taught entirely in foreign language: Yes

Language: French
International seminars and lectures

Course type: Lecture
Credit Points: 3
Teacher/Lecturer: TBA
Requirements: Proficient French ability and prior knowledge of law are essential

Course description:
Introduction to French legal terminology, with a focus on public and constitutional law. Courses will typically be offered as intensive units and taught by French guest lecturers.

Proofs of academic achievement: To be announced

This course is credited for „Optionalbereich“. No

Law and Global Challenges

Language: English

Department: Faculty of Law, Lehrstuhl Prof. Dr. Markus Kaltenborn
Contact: Emil Lorenz, e-mail: emil.lorenz@rub.de
Degree programme: Bachelor/Master
Module: Law and Global Challenges
Module taught entirely in foreign language: Yes
Course type: Seminar
Credit Points: 3
Teacher/Lecturer: Prof. Dr. Markus Kaltenborn
Requirements: Minimum English level B2

Course description:
This course looks at global challenges from the perspective of international and transnational law. Topics include climate change, human rights, development aid, the rule of law, global trade, peace and security and the fight against terrorism.

Proofs of academic achievement: Short presentation in English on a specific topic and active class participation.

This course is credited for „Optionalbereich“. No

Philosophy of Law

Language: English

Department: Faculty of Law, Lehrstuhl Prof. Dr. Stefan Magen
Contact: Ruth Körsger, e-mail: ruth.koersgen@rub.de
Degree programme: Bachelor/Master
Module: Philosophy of Law
Module taught entirely in foreign language: Yes
Course type: Lecture
Credit Points: 3
Teacher/Lecturer: Prof. Dr. Stefan Magen
Requirements: Minimum English level B2

Course description:
This lecture addresses the fundamental questions: what is law? What are the conditions of legal validity? Natural law theories, as well as legal positivism and American legal realism will be considered.

Proofs of academic achievement: Written examination
This course is credited for „Optionalbereich“. No

Thinking and Writing like a Lawyer (Should) – 4 classes at 4 different times, all same contents!!

Language: English

Department: Faculty of Law
Contact: Katrin Giesen, email: katrin.giesen@rub.de
Degree programme: Bachelor/Master
Module: Thinking and Writing like a Lawyer (Should)
Module taught entirely in foreign language: Yes
Course type: Lecture/workshop
Credit Points: 3
Teacher/Lecturer: Katrin Giesen
Requirements: Prior knowledge of law (either German or another legal system)

Room Day, Time Begin
GC 8/39 TBA TBA

Course description:
The main objective of the course is to improve the written and oral English skills of students. During the course, students will learn how to express themselves in plain English language. The course will include drafting exercises (letter of advice to client, legal research memorandum to partner) and the improvement of oral skills (presentation skills, client interview and negotiation, introduction to mooting). The course will be taught by providing theoretical knowledge, and then practising the acquired skills by way of drafting and oral presentations and discussions.
Proofs of academic achievement: Written assessment: drafting a client letter, plus oral assessment: a choice of negotiation or presentation in class.

This course is credited for „Optionalbereich“. No
FACULTY OF MECHANICAL ENGINEERING

APPLIED LASER TECHNOLOGIES (LAT)

Laser Metrology

Language: English/...

Department: Applied Laser Technologies (LAT)
Contact: Evgeny Gurevich, 0234-32-29891
Degree programme: Master
Module: Laser Metrology
Module taught entirely in foreign language:
Course type: Lecture
Credit Points: 6
Teacher/Lecturer: Evgeny Gurevich
Requirements: Bachelor's Degree physics/engineering

Room | Day, Time | Begin
--- | --- | ---
ID 05/158 | Thursday, 10.00-14.00 | 20/10/2015

Course description:
The students have gained knowledge of the principles and opportunities in laser based measurement. They understand the difference between non-coherent and coherent light and how to make use of coherence in interferometry. Third they understand how the different laser measurement principles can be used to measure physical or mechanical parameters.

Proofs of academic achievement: Oral examination

This course is credited for „Optionalbereich“.

https://www.ei.rub.de/studium/lehrveranstaltungen/356/
FACULTY OF MATHEMATICS

Geometry and Topology in many body systems

Language: English

Department: Faculty of Mathematics (Analytics II), Faculty of Physics and Astronomy
Contact: Prof. Dr. Jörg Winkelmann, 0234/32-28326, joerg.winkelmann@rub.de
Degree programme: Master
Module: Geometry and Topology in many body systems
Module taught entirely in foreign language: Yes
Course type: Lecture
Credit Points: 4.5
Teacher/Lecturer: Prof. Dr. Ilya Eremin and Prof. Dr. Jörg Winkelmann
Requirements: Bachelor’s Degree in Mathematics of Physics

Room
Day, Time
Begin
NB 6/73
Tuesday 10.00-12.00
October 20th 2015

Course description:
The purpose of the course is to study topics from modern quantum physics together with their mathematical backgrounds.

Proofs of academic achievement:
This course is credited for „Optionalbereich“. No
This course is especially suitable for exchange students. No

MATHEMATICAL ASPECTS OF DIFFERENTIAL EQUATIONS AND NUMERICAL MATHEMATICS

Language: English

Department: Faculty of Mathematics
Contact: Prof. Dr. Barney Bramham, 02347/32-24179, Barney.Bramham@rub.de
Degree programme: Master
Module: Mathematical Aspects of Differential Equations and Numerical Mathematics
Module taught entirely in foreign language: yes
Course type: Lecture
Credit Points:
Teacher/Lecturer: Prof. Dr. Barney Bramham
Requirements:

Room
Day, Time
Begin
NC 6/99 and NB 6/99
Wednesday 11-13 and Thursday 11-13
October 21st 2015
Course description:
As its title suggests, this lecture is about the mathematical aspects of differential equations and numerical analysis. Special emphasis is given to foundational mathematical concepts and their uses. The main topics of this lecture include: Aspects of linear algebra, the method of steepest descent, One-dimensional FEM (toy) models, Green’s Theorem.

Proofs of academic achievement:
This course is credited for „Optionalbereich“. No
This course is especially suitable for exchange students. No

Orthogonal Polynomials and Random Matrices

Language: English

Department: Faculty of Mathematics
Degree programme: Master
Contact: Prof. Dr. Peter Eichelsbacher, 0234/32-25793, peter.eichelsbacher@rub.de
Module: High-Dimensional Phenomena in Probability – Fluctuations and Discontinuity
Module taught entirely in foreign language: Yes
Course type: Lecture
Credit Points: 4.5
Teacher/Lecturer: Prof. Dr. Holger Dette, Prof. Dr. Peter Eichelsbacher
Requirements: Bachelor’s Degree in Mathematics

Room
NA 3/24
Day, Time
Monday 15.00-17.00
Begin
October 19th 2015

Course description:
This lecture gives an introduction to the application of orthogonal polynomials in the theory of random matrices. It is a special class for the lecture series of the Research Training Group RTG 2131.”High-Dimensional Phenomena in Probability – Fluctuations and Discontinuity”, But it is also very appropriate for students in the master program.

Proofs of academic achievement:
This course is credited for „Optionalbereich“. No
This course is especially suitable for exchange students.

The Malliavin-Stein Method

Language: English

Department: Faculty of Mathematics
Degree programme: Master
Contact: Prof. Dr. Peter Eichelsbacher, 0234/32-25793, peter.eichelsbacher@rub.de
Module: High Dimensional Phenomena in Probability – Fluctuations and Discontinuity
Module taught entirely in foreign language: Yes
Course type: Lecture
Credit Points: 4.5
Teacher/Lecturer: Prof. Dr. Peter Eichelsbacher, Prof. Dr. Christoph Thäle
Requirements: Bachelor’s Degree in Mathematics

Room  
Day, Time  
Begin  
NA 3/24  Monday 13.30-15.00  October 19th 2015

Course description:
This lecture is a special class for the lecture series of the Research Training Group RTG 2131 “High-Dimensional Phenomena in Probability – Fluctuations and Discontinuity”, but it is also very appropriate for students in the master program.

Stein’s method is a collection of probabilistic techniques that allow to assess the distance between two probability distributions by means of differential operators. It has been discovered in the last decade that one can successfully combine Stein’s method with the Malliavin calculus of variations. This so-called Malliavin-Stein method has become a versatile tool in many branches of probability theory and statistics.

In our Tandem Lecture we present the foundations of Stein’s method and that of the Malliavin calculus on the Wiener and the Poisson space. We then show how these techniques can be combined and how the resulting abstract error bounds evaluate in concrete situations. The applications we present are quantitative limit theorems for general functionals of Gaussian random fields, U-statistics and functionals that arise in stochastic geometry.

Proofs of academic achievement:
This course is credited for „Optionalbereich“. No
This course is especially suitable for exchange students.
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

DEPARTMENT FOR ORIENTAL AND ISLAMIC STUDIES

Muslims and Health in a Global Context: Medical Anthropological Perspectives from Bioethics to Medical Tourism

Language: English/...

Department: Oriental and Islamic Studies
Contact: Benjamin Flöhr, 49 (0)234/ 32- 25121, benjamin.floehr@rub.de
Degree programme: Master
Module: Muslims and Health in a Global Context: Medical Anthropological Perspectives from Bioethics to Medical Tourism
Module taught entirely in foreign language:
Course type: Seminar
Credit Points: 8
Teacher/Lecturer: Prof. Dr. Stefan Reichmuth/ Kira Schmidt-Stiedenroth, M.A.
Requirements: B.A. in Anthropology, Oriental Studies, Cultural Studies or Social Science

Room: To be confirmed
Day, Time: Friday 2-4pm
Begin: 23.10.2015
Course description:

New health technologies and practices such as organ transplantation and reproductive technologies have revolutionized medicine at the same time that they have brought forward important bioethical discussions. As theological discussions go on, Muslims in different parts of the world continue to take their own health related decisions based (or not) on current religious normativities and the own „local moral worlds“, i.e. their perception of what is moral according to their own social circumstances. In this seminar we will look into how medical anthropology has addressed these phenomena through the critical reading of ethnographies and the integration of own research into the learning process during the semester.

Proofs of academic achievement: Presentation, Seminar Paper

This course is credited for „Optionalbereich“. Yes
Climate, Energy, Ethics

Department: Philosophy Department
Contact: Prof. Dr. Klaus Steigleder klaus.steigleder@rub.de
Degree programme: Bachelor/Master/
Module: WM IIb, IIIb
Module taught entirely in foreign language: Yes
Course type: Seminar
Credit Points: 4/6
Teacher/Lecturer: Prof. Dr. Klaus Steigleder
Requirements: Bachelors Degree in... /

Room Day, Time Begin
GABF 04/511 Tuesday, 16-18 20/10/2015

Course description:
The impending climate change most likely constitutes the most pressing problem and the biggest moral challenge of our time. The seminar will especially focus on two difficult and urgent problem areas.
First, it will focus on the normative problems surrounding the energy policies required to combat climate change. For example, should one directly try to switch from fossil fuels to renewables, or should one first focus on natural gas as a transition fuel, which is both more realistic and easier to achieve? This last strategy presupposes “fracking” (hydraulic fracturing) on a grand scale. How are the risks of fracking to be evaluated in comparison to the risks of business as usual? Second, the seminar will focus on the problems of conceptualizing and determining our climate related responsibilities to future people.

Proofs of academic achievement: Oral examination/written examination/...
This course is credited for „Optionalbereich“. No

Communication and Cognition. A Competitive Approach to Animal Vocalizations, Verbal Language and Music

Department: Philosophy Department
Contact: Prof. Dr. Albert Newen, phone +49 (0)234 3222139, albert.newen@rub.de
Degree programme: Master

Language: English
Module: WM IIIa, Master Cognitive Science  
Module taught entirely in foreign language: Yes  
Course type: Workshop  
Credit Points: 6  
Teacher/Lecturer: Prof. Dr. Albert Newen, Dr. Piera Filippi  
Requirements: Bachelor’s Degree in philosophy, linguistics, psychology, and cognitive neurosciences  

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<tr>
<td>GA 03/46</td>
<td>01.-05. March 2016, 9:00-15:00</td>
<td>01/03/2016</td>
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Course description:  
This course will cover key topics on animal cognition and communication, and is divided into four modules: 1) signal production, 2) semantics and syntax, 3) the ability of rational thoughts, 4) social pragmatics: the role of sound modulation in verbal language and music. These modules will be addressed through a comparative approach to experimental findings on animal cognition. Philosophical reasoning will be constantly solicited, with the aim of putting key empirical questions on animal linguistic and rational behaviors into a broader perspective. The course will ultimately favor a deep understanding of the modern debates surrounding the evolution of language.

Proofs of academic achievement: To be discussed in the seminar  
This course is credited for „Optionalbereich“. No

Conflicting Ideas, Conflicting Interests: Science and Society  
Language: English  

Department: Institute of Philosophy II  
Contact: Dr. Dunja Šešelja (Dozent/in), Philosophisches Institut II, GA 3/155, Fon: +49(0)234-32-28714, email: dunja.seselja@rub.de  
Degree programme: Bachelor  
Module: Conflicting Ideas, Conflicting Interests: Science and Society  
Module taught entirely in foreign language:  
Course type: Seminar + Practical Skills  
Credit Points: 5  
Teacher/Lecturer: Dr. Dunja Šešelja (Dozent/in) (together with guest lecturers)  
Requirements: Bachelor students of all faculties are welcome (beside a good command of English, no other background knowledge is required). Bachelor students of all semesters can take part in the module. Given the interdisciplinary character of the module, no restrictions should be posed on the main study domain of the students.  

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<tr>
<td>TBA</td>
<td>Wednesday 16-18;18-20</td>
<td>21st October 2015 at 16h</td>
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Course description:
The aim of the module is two-fold: on the one hand, to introduce students to a variety of topics surrounding conflicts and disagreements in various social contexts, with a special emphasis on scientific disagreements. On the other hand, to introduce students to the practice of debating and to help them develop the skills of critical and argumentative reasoning. The module consists of two parts:
Part 1: Conflicting ideas, conflicting interests: science and society (Seminar)
Part 2: Debating and argumentative reasoning (Practical skills).
More information available at:
http://homepages.ruhr-uni-bochum.de/defeasible-reasoning/conflicting-ideas.html

Proofs of academic achievement: The mark is calculated as follows:
Part 1:
- protocol of one seminar class (10%)
- a wiki or a poster related to a topic discussed within the seminar (40%)
Part 2:
- participation in the final debate tournament (25%)
- an essay with a list of arguments for and against one of the debatable topics (a list of possible topics will be offered during this part of the module) (25%)

This course is credited for „Optionalbereich“. Yes

Introduction to Cognitive Science for Philosophers and Students of Cognitive Sciences

Department: Philosophy Department
Contact: Prof. Dr. Albert Newen, phone +49 (0)234 3222139, albert.newen@rub.de
Degree programme: Master
Module: WM IIc, WM IIIc, Master Cognitive Science
Module taught entirely in foreign language: Yes
Course type: Lecture
Credit Points: 4 (or 6)
Teacher/Lecturer: Prof. Dr. Albert Newen, Prof. Dr. Tobias Schlicht
Requirements: Bachelor’s Degree in philosophy, linguistics, psychology, and cognitive neurosciences

Room Day, Time Begin
HGA 30 Wednesday, 10.00-12.00 21/10/2015

Course description:
The lecture introduces the interdisciplinary field of cognitive science in combining philosophy, psychology, computational modeling and neurosciences. The lecture has the aim to deliver
important basic knowledge from empirical sciences in the framework of theory formation. The credit points are delivered on the basis of a written examination and of some active work in the obligatory additional seminar.

The structure of the lecture:
1 Introduction: History of Cognitive Science
2 Cognitive Neuroscience of Perception (GAFO 03/252)
3 Modeling Vision
4 Philosophy of Consciousness
5 Procedural Memory and Action Control
6 Enacted and Embodied Cognition
7 Models of Motor Control
8 Theories of Emotion
9 Cognitive Neuroscience of Emotion (GAFO 03/252)
10 Memory of Emotion
11 Social Cognition: Evolution, Development, Pathology
12 Models of Learning and Memory
13 Hippocampal Memory Systems

Proofs of academic achievement: Written examination

This course is credited for „Optionalbereich“. No

Joint action and collective intentionality

Language: English/…

Department: Philosophy Department
Contact: Dr. Joulia Smortchkova joulia.smortchkova@rub.de
Degree programme: Bachelor/Master/…
Module: WM IIc, IIIc
Module taught entirely in foreign language: Yes
Course type: Seminar
Credit Points: 4/6
Teacher/Lecturer: Dr. Joulia Smortchkova, M.Sc. Judith Martens
Requirements: Bachelors Degree in…/…

Room: GABF 04/358
Day, Time: Wednesday, 10-12
Begin: 21/10/2015

Course description:
“Ask yourself what you must take for granted in order that you can ever have or act on collective intentions” (Searle 1990). This course will study the main body of texts with approaches to answering this question. We will discuss subject, object, and mode accounts of collective intentionality.
The seminar will have three parts. In the first part we will provide the theoretical tools necessary for studying collective intentions and joint actions, in particular we will examine the relation...
between intention and action. From there we will make the step to planning theories of collective intentionality and joint action (e.g. Searle, Bratman, Tuomela, Gilbert). The last part of the course will focus on bottom-up approaches that focus on empirical data to understand joint action (Tollefsen, Sebanz, Knoblich, Butterfill). We are constantly adjusting our behavior to the people that are surrounding us. What are we synchronizing, imitating, and aligning? What mechanisms underlie such processes? And how can it help us in collective intentionality and joint action?

Proofs of academic achievement: Oral examination/written examination/...

This course is credited for „Optionalbereich“. No

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**Kant and World Poverty**

Language: English/...

**Department:** Philosophy Department  
**Contact:** Prof. Dr. Corinna Mieth  
**corinna.mieth@rub.de**

**Degree programme:** Bachelor/Master/...  
**Module:** WM IIb, IIIb  
Module taught entirely in foreign language: Yes

**Course type:** Seminar  
**Credit Points:** 4/6

**Teacher/Lecturer:** Prof. Dr. Corinna Mieth

**Requirements:** Bachelors Degree in... /...

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<tr>
<td>GC 03/142</td>
<td>Monday 10-12</td>
<td>18/10/2013</td>
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**Course description:**
The problem of absolute poverty is one of the most urgent problems of today’s moral philosophy. One of the central questions in the philosophical debate about this problem is what kinds of duties are arising from it. Do we, as citizens of the western wealthy nations, have duties to help or do we have duties of justice concerning the poverty problem? How strong could such duties be? From a Kantian perspective such duties are interpreted as weak duties. But is this really the case?

Proofs of academic achievement: Oral examination/written examination/...

This course is credited for „Optionalbereich“. No

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**Lecture Series “Ethics-Economics, Law, and Politics”**

Language: English/...

**Department:** Philosophy Department  
**Contact:** martina.tomczak@rub.de

**Degree programme:** Master  
**Module:** WM IIIb  
Module taught entirely in foreign language: Yes
International seminars and lectures

**Course type:** Lecture
**Credit Points:** 6

Teacher/Lecturer: Prof. Dr. Corinna Mieth, Prof. Dr. Klaus Steigleder

Requirements: Bachelors Degree in... /...

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<td>GA 03/46</td>
<td>Wednesday, 18-20</td>
<td>28.10.2015</td>
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Course description:
In the lecture series the faculty members of the master's program "Ethics - Economics, Law, and Politics" (EELP) as well as invited speakers take turns giving talks on each of the focus topics of the EELP program from the perspective of their disciplines. The lecture series which is part of the master's program "Ethics - Economics, Law and Politics" may also be attended by students of the master's programs in philosophy and by advanced students in the bachelor's degree course in philosophy. Credit points can be acquired by writing summaries or essays. The program of the lecture series will be announced at the beginning of October. The lectures will be held in English.

Proofs of academic achievement: Oral examination/written examination/...

This course is credited for „Optionalbereich“. No

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Logic Online Course

Language: English

Department: Philosophy Department

Contact: Dr. Peter Brössel, phone +49 (0)234 32 24724, broessep@uni-mainz.de

Degree programme: Bachelor

Module: WM Ia
Module taught entirely in foreign language: Yes

Course type: Online Course

Credit Points: 4

Teacher/Lecturer: Dr. Peter Brössel

Requirements: none

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<tr>
<td>GABF 04/609</td>
<td>Tuesday, 2-4 pm</td>
<td>20/10/2015</td>
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Course description:
This course aims at delivering a systematic introduction into the field of logic from the perspective of philosophy. The seminar is organized as an online-seminar. Thus you need online access to get the scriptum and to submit the homework. On the platform “blackboard” we offer a script of the lecture as well as exercises. The seminar will be supported by an online-tutorial. There will be four meetings at the university during the semester. The first meeting will take place on Tuesday, 20.10.2015, 2-4 pm. Further meetings will be announced in the first meeting.
Please register by sending an email to peter.broessel@rub.de

Proofs of academic achievement: Precondition for receiving a certificate: 1.) to achieve at least 50 % of the points in the weekly homework and 2.) to pass the written exam at the end of the course.

This course is credited for „Optionalbereich“. No

Mental representations in philosophy and cognitive science

Department: Philosophy Department
Contact: Dr. Joulia Smortchkova  joulia.smortchkova@rub.de
Degree programme: Master
Module: WM IIIa
Module taught entirely in foreign language: Yes
Course type: Seminar
Credit Points: 6
Teacher/Lecturer: Dr. Joulia Smortchkova
Requirements: Bachelors Degree in... /...

Room  Day, Time  Begin
GA 03/46  Monday, 10-12  19/10/2015

Course description:
The most important explanatory posit in philosophy of mind is the concept of mental representation, used to explain central psychological abilities, such as language, perception, memory, reasoning, and action. Therefore, it has played an absolutely crucial role throughout the cognitive sciences, in neuroscience, cognitive psychology, social psychology, linguistics, artificial intelligence, cognitive anthropology and ethology. In other words, to understand the notion of “mental representation” is to understand the very nature of thought itself.
The course will be divided in two parts. In the first part I will introduce the notion of mental representation, its history, and its uses in philosophy of mind and in cognitive science (in particular based on readings from Fodor, Block, Dretske, Millikan, Sterelny, Ryder). I will focus on the debate about the naturalization of mental representations and introduce some of the theories that try to provide a naturalistic account of mental representations. In the second part, I will discuss some of the main critiques against the notion of mental representation and its centrality in philosophy of mind and cognitive science.

Proofs of academic achievement: Oral examination/written examination/...

This course is credited for „Optionalbereich“. No
Mirror Neurons and their Role in Social Cognition

**Department:** Philosophy Department  
**Contact:** Prof. Dr. Albert Newen, phone +49 (0)234 3222139, albert.newen@rub.de  
**Degree programme:** Master  
**Module:** WM IIa/ Master Cognitive Science  
Module taught entirely in foreign language: No  
**Course type:** Workshop  
**Credit Points:** 4 (or 6)  
**Teacher/Lecturer:** Prof. Dr. Albert Newen, Larissa Heege M.A.  
**Requirements:** Bachelor’s Degree in philosophy, linguistics, psychology, and cognitive neurosciences  

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<tr>
<td>GABF 04/716</td>
<td>14.-18. March 2016, 9 am -2 pm</td>
<td>14/03/2016</td>
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**Course description:**  
Mirror neurons were first discovered in 1990 by a research group around Giacomo Rizzolatti at the University of Parma. Several Theories in the field of Cognitive Science are built on these findings of mirror neurons: Theories on how we understand the actions and emotions of others and on how we empathise with other people. However, in the last years there has been an increasing criticism on mirror neuron theory, which claims that researchers have read too much into the discovery of these bimodal neurons.

In the Blockseminar shall be discussed the empirical bases of mirror neurons, theories that are built on the finding of mirror neurons and critique of these theories.

**Proofs of academic achievement:** To be discussed in the seminar

**This course is credited for „Optionalbereich“:** No

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Philosophy of Language: Conventions

**Department:** Philosophy Department  
**Contact:** Dr. Peter Brössel, +49 (0)234 3224724, peter.broessel@rub.de  
**Degree programme:** Master  
**Module:** WM IIa, WM IIIa, M.ed. WM IIIa, Master Cognitive Science  
Module taught entirely in foreign language: Yes  
**Course type:** Seminar  
**Credit Points:** 4 (or 6)  
**Teacher/Lecturer:** Dr. Peter Brössel
**Requirements:** Bachelor’s Degree in philosophy, linguistics, psychology, and cognitive neurosciences

**Room:** GABF 04/358  
**Day, Time:** Thursday, 14.00-16.00  
**Begin:** 22/10/2015

**Course description:**

The distinction between analytic and synthetic statements is a central aspect of many theories in epistemology and philosophy language. An analytic statement is thought of as being true respectively false in virtue of its syntactic structure and the meanings of its constituents. But how do single words (i.e. the constituents of statements) get their meaning? The traditional answer is that “language is ruled by convention” and we assign meanings to words by agreeing on how to use that word. As a consequence, analytic statements are true or false by convention. However, in the early 1930ies this view has been challenged most prominently by W. v. O. Quine. How could we assign meaning to words by conventions if we don’t have a language to agree upon these conventions in the first place? David Lewis, a student of Quine and one of the most celebrated philosophers of the 20th century, tried to answer that question in his seminal book “Convention: A Philosophical Study” (his PhD-thesis). In this seminar we will study Lewis’s work on conventions.

**Proofs of academic achievement:** To be discussed in the seminar

This course is credited for „Optionalbereich“. No

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**Theories of Consciousness**

**Language:** English

**Department:** Department Philosophy  
**Contact:** Dr. Beate Krickel, +49 (0)234 3224724, beate.krickel@rub.de  
**Degree programme:** Master  
**Module:** WM IIa, WM IIIa, Master Cognitive Science  
**Module taught entirely in foreign language:** Yes  
**Course type:** Seminar  
**Credit Points:** 4 (or 6)  
**Teacher/Lecturer:** Dr. Beate Krickel  
**Requirements:** Bachelor’s Degree in philosophy, linguistics, psychology, and cognitive neurosciences

**Room:** GABF 04/609  
**Day, Time:** Thursday, 10.00-12.00  
**Begin:** 22/10/2015

**Course description:**

Consciousness is one of the most exciting and at the same time most puzzling problems philosophers and other scientists deal with. Although nothing seems to be as familiar to us as our own conscious states, there is wide disagreement on what consciousness actually is. So far, a great variety of different approaches to consciousness have been developed. In this seminar we will discuss the central positions regarding the nature of consciousness that have been developed in contemporary philosophy of mind.
Literature: Theories of Consciousness by William Seager

Further reading: http://plato.stanford.edu/entries/consciousness/#SpeTheCon

Proofs of academic achievement: To be discussed in the seminar

This course is credited for „Optionalbereich“. No

Thinking About Logic

Language: English

Department: Philosophy Department
Contact: Dr. Mathieu Beirlaen (telephone (internal): 28714; email: mathieu.beirlaen@rub.de)
Degree programme: Bachelor / Master
Module: WM IIa / WM IIIa / Master in Cognitive Science
Module taught entirely in foreign language: Yes
Course type: Seminar
Credit Points: 4/6
Teacher/Lecturer: Dr. Mathieu Beirlaen
Requirements: Familiarity with propositional logic

Room: GABF 04/609
Day, Time: Tuesday 10.00 – 12.00
Begin: 2015-10-20

Course description:
The study of logic raises interesting philosophical questions and puzzles about knowledge, meaning, rationality, and reality. Why should we accept an inference as valid? When and how is deduction justified? How do we decide what counts as a logical connective and what does not? Besides classical logic, what are the alternative conceptions of logical inference? What, if anything, does logic tell us about the world out there?
This course is intended to familiarize students with these questions by means of a number of classic essays in the field, which are carefully selected in terms of their significance, clarity, and accessibility. Most of the texts will be short and non-technical, although a basic understanding of propositional logic is recommended.
The seminar will be taught in English. Below is a preliminary selection of texts to be included in the literature list for this course.

Proofs of academic achievement: Written test (seminar paper)

This course is credited for „Optionalbereich“. No
FACULTY OF PSYCHOLOGY

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 Lehrrangeb
Module taught entirely in foreign language: Yes
Course type: Seminar
Credit Points: 0
Teacher/Lecturer: Prof. Dr. Dres. h.c. Onur Güntürkün
Requirements: Bachelors Degree in... /...

Room
Day, Time
Begin
GAFO 05/425
Monday, 1-3pm
http://www.bio.psy.rub.de/

Course description:
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: http://www.bio.psy.rub.de/

Proofs of academic achievement: no examination

This course is credited for „Optionalbereich“. No

Left Brain - Right Brain - 118111

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: Asymmetry
Module taught entirely in foreign language: Yes
Course type: Lecture
Credit Points: 3
Teacher/Lecturer: Prof. Dr. Dres. h.c. Onur Güntürkün
Requirements: Bachelors Degree in... /...
Course description:
Most of our brain’s processes are executed by different mechanisms in the left and the right hemisphere. Language, spatial orientation, motor control, emotional processing, face perception, and even the ability to comprehend the rhythm of a drum are guided by neural circuits that are differently tuned within the two hemispheres. These asymmetries of mental processing mean that damages of the human brain cannot be understood without a thorough understanding of asymmetries. The lecture aims at explaining the current knowledge about the structure and the mechanisms of cerebral asymmetries by making use of highly interactive teaching methods.

Proofs of academic achievement: written examination

This course is credited for „Optionalbereich“. No

From basic to advanced fMRI methods

Language: English

Department: Neuropsychology
Contact: Dr. Hui Zhang, -23174, hui.zhang-c5u@rub.de
Degree programme: Master
Module: From basic to advanced fMRI methods
Module taught entirely in foreign language: Yes
Course type: Seminar
Credit Points: 3
Teacher/Lecturer: Dr. Hui Zhang
Requirements: Bachelor Psychology

Course description:
This seminar seeks to provide a broad, comprehensive, and rigorous introduction to fMRI research. We will start from a systematic review of the physics and biology of fMRI and then extend upward into modern fMRI research. Attendants will learn about proton spin, experimental design, the general linear model, and signal processing. We will discuss chapters of an introductory book by Huettel, Song and McCarthy.

Proofs of academic achievement: Oral examination/written examination/...

This course is credited for „Optionalbereich“. No
The whole is more than the sum of its parts: moving from “mass-univariate” to multivariate approaches in cognitive neuroscience

Language: English/...

Department: Neuropsychology
Contact: Dr. Lorena Deuker, 21882, lorena.deuker@rub.de
Degree programme: Master
Module: Multivariate Verfahren
Module taught entirely in foreign language: Yes
Course type: Seminar
Credit Points: 3
Teacher/Lecturer: Dr. Lorena Deuker
Requirements: Bachelor Psychology

Room: GAFO 03/974
Day, Time: Tuesday 12 -14
Begin: 20.10.2015

Course description:
Traditional analysis methods for neuroimaging data looked at activity within a single measurement unit (e.g. one voxel) and tested for significant differences in means; this was then repeated for every measurement unit in the brain until one had statistical results for every individual unit - the so-called “mass-univariate” approach. Apart from the need for very strong effect sizes due to increasing alpha error, this method might not get the whole picture of what is happening in the brain. Percepts or memories might be better understood by investigating the pattern of activity across many different measurement units. This seminar will provide an introduction to methods of analysis for fMRI and EEG data that go beyond univariate analysis. We will discuss the relevant literature and will also do some hands-on demonstration with example datasets.

Proofs of academic achievement: Oral examination/written examination/...

This course is credited for „Optionalbereich“. No
Dear students, dear guests,

The Faculty of Social Science pursues a modern interdisciplinary approach to Social Science. One characteristic of our Bachelor’s degree is the combination of the five disciplines Political Science, Sociology, Social Psychology and Social Anthropology, Social Policy and Social Economy, as well as Social Science Methodology and Statistics. While our graduate students specialize on a major within Social Science, they still have the opportunity to select courses from the other programs, namely “Management and Regulation of Work, Economics, and Organization”, “Health Care Systems and Health Care Economics”, “Urban and Regional Planning”, “Globalization, Transnationalization, and Governance”, “Culture and Person”, “Methodology and Statistics”, and “Gender Studies”.

Exchange Students with previous knowledge in Social Science are welcome to consult our Common Course Catalogue with the Faculties of Political Science and Sociology at the University of Duisburg-Essen (Link see below). In order to broaden our offer of courses held in English, we cooperate closely with the University of Duisburg-Essen as part of the University Alliance Ruhr (UA Ruhr). The Faculty of Social Sciences in Duisburg/Essen offers a wide range of courses in the field of political science and sociology. In particular students with a high interest in International Relations, Governance, Development Policy, Migration and East Asian Studies can advance their professional competences within these fields.

In case you are enrolled full-time at RUB and plan to take any courses in order to fulfil requirements in the Optionalbereich, please contact Inga Bienert (Poloczek-Optionalbereich@rub.de) beforehand.

For further information about studying at the Faculty of Social Science, including our Common Course Catalogue with the University of Duisburg-Essen, please consult our website: http://www.sowi.rub.de/studium/auslandsstudium/index.html.en

The complete course descriptions are available in the Faculty of Social Science's own course catalogue (Sowi-Info, available online: http://www.sowi.rub.de/studium/vorlesungsverzeichnis/index.html.de).

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The European Union in Global Governance

**Language:** English/...

**Department:** Chair of International Politics

**Contact:** Prof. Dr. Stefan A. Schirm, 0234-32223016/17

**Degree programme:** Master

**Module:** International Institutions and Processes (IIP)

Module taught entirely in foreign language: No

**Course type:** Seminar

**Credit Points:** Full Module: 9

**Teacher/Lecturer:** Prof. Dr. Stefan A. Schirm
Requirements: Participation in the Lecture ‘Introduction in International Relations’, Literature Summaries of six texts, registration in CampusOffice.

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<td>n.a.</td>
<td>Tuesday 14:15-15:45</td>
<td>20/10/2015</td>
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Course description:
The performance of EU member states and the EU Commission in global governance is examined regarding the core policy areas of security, trade, and finance with a focus on major international organizations in charge of global governance: the World Trade Organization (WTO), the UN Security Council (UNSC), the Organization of Security and Cooperation in Europe (OSCE) and the Group of 20 (G20). Presentations will first assess the strategies and the performance of individual EU members as well as of the EU Commission. In a second step, the underlying societal and institutional reasons for the divergence and/or convergence of EU member states’ and EU Commissions’ strategies will be examined by analyzing the institutional as well as the domestic political pressures on governments regarding the ideational and material societal foundations of governmental and the EU Commission’s strategies in global governance.

Literature
The literature can be found on the following website www.rub.de/l sip or in CampusOffice.

Proofs of academic achievement: Literature Summaries, Presentation with Hand-Out and Discussion Questions, Active and Regular Participation.

This course is credited for „Optionalbereich“. Yes

Democracy, national and international

Language: English

Department: Faculty of Social Science
Contact: Heike Zöller, international-services@sowi.rub.de, +49 (234) 32-22966
Degree programme: Bachelor/Master
Module: International Structures and Processes
Module taught entirely in foreign language: No
Course type: Seminar
Credit Points: 3/5/6
Teacher/Lecturer: Dr. Volker Heins
Requirements: Registration through Campus Office starting 17.08.2015.

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<td>GBCF 05/606</td>
<td>Thursday (biweekly)</td>
<td>22/10/2015</td>
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Course description:
This course will cover classic and more recent literature in democratic theory. We will first explore fundamental questions such as „What is democracy?“, „Is democracy justified?“, „What is it good
International seminars and lectures

for?”, „Is democracy compatible with capitalism?”, etc., before we move on to discuss the complex
question of whether democracy can also be applied to transnational power structures and
international institutions.

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

This course is credited for „Optionalbereich“. No

Family and Health

Language: English

Department: Faculty of Social Science
Contact: Heike Zöller, international-services@sowi.rub.de, +49 (234) 32-22966
Degree programme: Master
Module: Health and Society
Module taught entirely in foreign language: No
Course type: Seminar
Credit Points: 3/6
Teacher/Lecturer: n.n.
Requirements: This course is open to M.A. students with concluded B.A. advanced module
„Sozialstruktur und sozialer Wandel“ or equivalent. Other requirements for participation: Active
participation and good knowledge of the English language (seminar language is English).
Registration via CampusOffice starting 17.08.2015.

Room
Day, Time
Begin
To be announced
To be announced
To be announced

Course description:
In the first lessons the lecture provides an overview of epidemiological methods and focus then on
determinants affecting children’s and adult’s health over life course. Different phases in life
interact in the determination of health and socio-economic outcomes. The lecture discusses
results from recent empirical research showing that environmental conditions in utero and during
eyearly childhood can have significant long-term effects on health. Single topics (amongst others):
- Intergenerational transmission of health and socio-economic status
- The impact of early life health shocks on the development of cognitive abilities
- The development of non-cognitive and psychosocial skills over the life cycle
- Nutrition and food insecurity

Proofs of academic achievement: Modulprüfung: short presentation, poster, attendance on poster
session. Studiennachweis: short presentation, poster.

This course is credited for „Optionalbereich“. No
Jessica Benjamin's psychoanalytic theory: intersubjectivity, gender, recognition

Language: English

Department: Faculty of Social Science
Contact: Heike Zöller, international-services@sowi.rub.de, +49 (234) 32-22966
Degree programme: Bachelor
Module: Social and Cultural Theory; Social and Cultural Psychology; Identitäten, Positionen, Differenzen
Module taught entirely in foreign language: No
Course type: Seminar
Credit Points: 3/5
Teacher/Lecturer: Dr. Anna Sieben

Requirements: This seminar will be taught in English - but it is not a seminar exclusively for advanced speakers. Please feel free to participate and practice your English! No previous knowledge of psychoanalytic theories necessary. Registration via CampusOffice starting 17.08.2015.

Room  Day, Time  Begin
GC 03/146  Monday 10.00-11.30  19/10/2015

Course description:
This seminar offers an in-depth reading and discussion of Jessica Benjamin's psychoanalytic work. Benjamin - who was awarded the Hans-Kilian-Award in 2015 - works on the development of inter-subjectivity. The question of how human beings relate to each other is central for her psychoanalytic theory. She applies her theory to different areas, three of them will be topics of the seminar: parent-child relationships, the development of gender relations, and international conflicts.

Proofs of academic achievement: Studiennachweis: presentation. Modulprüfung: presentation and essay or oral exam

This course is credited for „Optionalbereich“. No

MApping REfugees' arrivals at the Mediterranean borders: Migration, Refugees, Border Regimes - an interdisciplinary perspective

Language: English

Department: Faculty of Social Science
Contact: Heike Zöller, international-services@sowi.rub.de, +49 (234) 32-22966
Degree programme: Bachelor
Module: Empiricism Module or complete module for the Optionalbereich
Module taught entirely in foreign language: Yes
Course type: Seminar
Credit Points: 14/20
Teacher/Lecturer: Anna Gansbergen, M.A.
**Requirements:** Interest in the discourse of migration. Knowledge in oral and written English. 100 euros of co-payment for a one-week excursion to Spain, Italy, Greece, Cyprus or Malta. Regular attendance in activities of the seminars (both in WS 2015/16 and SS 16) and participation in the excursion in March 2016. Presentation of the research findings. Registration via Campus Office starting 17.08.2015.

**Course description:**
1. Introduction to Migration Research
2. Introduction to the methods of Empirical Social Research (expert interviews, narrative interviews, etc.)
3. Preparations for the excursion and the interviews to be conducted

**Proofs of academic achievement:** Regular attendance in activities of the seminars, participation in the excursion in March 2016, presentation of research findings.

**This course is credited for „Optionalbereich“:** Yes

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**Medical Anthropology**

**Language:** English

**Department:** Faculty of Social Science

**Contact:** Heike Zöller, international-services@sowi.rub.de, +49 (234) 32-22966

**Degree programme:** Bachelor

**Module:** Social and Cultural Anthropology

Module taught entirely in foreign language: No

**Course type:** Seminar

**Credit Points:** 3/5

**Teacher/Lecturer:** Dr. Tina Otten

**Requirements:** Completed module “Grundlagen der Kulturpsychologie und Sozialanthropologie“. Registration via Campus Office starting 17.08.2015.

**Course description:**
This introduction to Medical Anthropology begins with basic concepts of the discipline before focusing on Critical Medical Anthropology. The seminar deals with body images and their political, economic and historical influences on individual health and the health status of specified social groups. In this regard there will also be analyses of visual documentations and concepts of illness and health.
The Organization of Everyday Life

Language: English

Department: Faculty of Social Science

Contact: Heike Zöller, international-services@sowi.rub.de, +49 (234) 32-22966

Degree programme: Master

Module: Social-scientific Theories

Module taught entirely in foreign language: No

Course type: Seminar

Credit Points: 3

Teacher/Lecturer: Eric Livingston, PhD

Requirements: A regular class attendance and participation as well as the regular submission of exercise notes is required. Registration via CampusOffice starting 17.08.2015.

Room
To be announced

Day, Time
To be announced

Begin
To be announced

Course description:
Students are practical experts at most of the topics in this unit. They can stand in line to get their morning latte; they can get to university lectures pretty much on time. Yet once enrolled in the unit, some will experience massive forgetting, resist any attempt to describe what they do, demand readings that will tell them what they already know, and claim that even if there might be something about such practices that they hadn't considered, it wouldn't be worth investigating anyway. The abiding interest in this unit is to learn to see, recognize, and analyze how people are continually organizing what they are doing as they are doing it. We’ll see what we can discover through our own investigations.

While there may be a few short readings, the basic work for the unit will be coming to the lectures and doing some exercises that are given in class. Example exercises may involve doing some vacuuming (maybe one room), maybe revisiting vacuuming after discussion and bringing an orange to class for an in-class exercise.

Proofs of academic achievement: For a „StudienNachweis“ students will have to write a 500-800 word midterm paper (500 word preference) on a setting of organizational lived-work. They will then write a similar paper and work up a short PowerPoint Presentation. Assessment: 35% midterm paper; 45% final paper; 10% PowerPoint slides plus presentation (5-10 minutes depending on size of class), 10% participation/cooperation points. For a “Modulprüfung” students will have the same midterm paper assignment. They will then have to pick (with approval) some activity in which they are regularly engaged and that is part of a domain of mundane expertise (waitressing, dancing the tango, ...) They will write a 1000-1500 word final paper on some aspect of the organizational lived-work of the activity, and give a longer PowerPoint Presentation.
Assessment: 30% midterm paper; 50% final paper; 10% PowerPoint slides and presentation; 10% participation/ cooperation points.

This course is credited for „Optionalbereich“. No
INSTITUTE OF MEDIA SCIENCES

BRAZILIAN AND EUROPEAN TELENNOVELA

Language: English

Department: Lehrstuhl für Filmwissenschaft mit dem Schwerpunkt Filmtheorie und Filmästhetik
Contact: Prof. Dr. Oliver Fahle, 0234 – 32 – 25070, oliver.fahle@rub.de
Degree programme: Bachelor/Master/Int. Master “Film and Audiovisual Media”
Module: Gegenstandsmodule – Rundfunk; Systematische Module – Ästhetik und Technik;
Vertiefendes Modul; Kulturelles Erbe, Geschichte und Archiv des Kinos; Theorie der visuellen
und akustischen Formen
Module taught entirely in foreign language: No
Course type: Seminar
Credit Points: 2.5;5/3.5/5
Teacher/Lecturer: Prof. Dr. Felipe Muanis
Requirements: -

Room
GA 1/138

Day, Time
Monday 12.15-13.45

Begin
26/10/2015
Blocktermine:
16.11, 30.11, 14.12, 11.01,
12.15-17.45

Course description:
https://campus.ruhr-uni-bochum.de/campus/all/event.asp?gguid=0x5FA24844A6004642B5178DC0929C1060&tguid=0x39FF9E73E27E1445BFB66A7776030329

Proofs of academic achievement: Oral examination/term paper/essay

This course is credited for „Optionalbereich“. No

MODERN TELEVISION: PALEO-, NEO- AND HYPERTELEVISION

Language: English

Department: Lehrstuhl für Filmwissenschaft mit dem Schwerpunkt Filmtheorie und Filmästhetik
Contact: Prof. Dr. Oliver Fahle, 0234 – 32 – 25070, oliver.fahle@rub.de
Degree programme: Bachelor/Master/Int. Master “Film and Audiovisual Media”
Module: Gegenstandsmodule – Rundfunk; Systematische Module – Ästhetik und Technik;
Vertiefendes Modul; Soziologie, Ökonomie und Technologie des Films und der audiovisuellen
Medien; Praxis der Neuen Medien und der Kultur des Bildes
Module taught entirely in foreign language: No
Course type: Seminar
Credit Points: 2,5/5;3,5/5
Teacher/Lecturer: Prof. Dr. Felipe Muanis
Requirements:

Room
GA 1/138

Day, Time
Tuesday 12.15-13:45

Begin
27/10/2015

Course description:
https://campus.ruhr-uni-bochum.de/campus/all/event.asp?gguid=0x0B3424AA85002C4B956A8EAB8FF6124F&tguid=0x39FF9E73E27E1445BFB66A7776030329

Proofs of academic achievement: Oral examination/term paper/Essay

This course is credited for „Optionalbereich“.

THE MODERN CINEMA INTERSECTIONS FROM GLAUBER ROCHA, LUIS BUÑUEL AND PIER PAOLO PASOLINI

Language: English

Department: Lehrstuhl für Filmwissenschaft mit dem Schwerpunkt Filmtheorie und Filmästhetik

Contact: Prof. Dr. Oliver Fahle, 0234 – 32 – 25070, oliver.fahle@rub.de

Degree programme: Bachelor/Master/Int. Master “Film and Audiovisual Media”

Module: Gegenstandsmodule – Film/Kino; Systematische Module – Mediengeschichte; Vertiefendes Modul; Visuelle Kultur und Anthropologie des Bildes; Geschichte der visuellen und akustischen Formen

Module taught entirely in foreign language: Yes

Course type: Seminar

Credit Points: 2,5;5/3,5/5

Teacher/Lecturer: Prof. Dr. Felipe Muanis

Requirements:

Room
GA 1/138

Day, Time
Thursday 16.15-17.45

Begin
29/10/2015

Course description:
https://campus.ruhr-uni-bochum.de/campus/all/event.asp?gguid=0x858C0170FE4AE34C835B00262F437724&tguid=0x39FF9E73E27E1445BFB66A7776030329

Proofs of academic achievement: Oral examination/term paper/essay

This course is credited for „Optionalbereich“.

Yes
INSTITUTE OF NEURAL COMPUTATION

Homepage: www.ini.ruhr-uni-bochum.de

Contact:
Name: Dr. Rolf Würtz
Room: NB 3/66
Tel: 0234/32-27994
Email: Rolf.Wuertz@ini.rub.de
Consultation hours: 11:00 - 15:00 h

Artificial Neural Networks

Language: English

Department: Institut für Neuroinformatik
Degree programme: Bachelor
Module: Artificial Neural Networks
Module taught entirely in foreign language: yes
Course type: Lecture and Tutorial
Credit Points: 5
Teacher/Lecturer: PD Dr. Rolf Würtz
Requirements: none

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<td>HZO 100</td>
<td>Friday, 12.15-14.00</td>
<td>23/10/15</td>
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Course description:
This lecture presents standard algorithms and new developments of feedforward Artificial Neural Networks, their functioning, application domains, and connections to more conventional mathematical methods. Examples show the potential and limitations of the methods. Supervised as well as unsupervised learning methods are introduced.

In detail:
1) Introduction, some biological facts
2) Mathematical foundations: probability theory and partial derivatives
3) One-layer networks and linear discriminants
4) Multilayer networks and error backpropagation
5) Universality of two-layer networks
6) Radial basis function networks
7) Neuronal maps: Kohonen network, Growing Neural Gas
8) Optimization methods

The course will be given in English upon request.
Grades and credits are given according to the percentage of solved problems in exercise 310012 and presentation of a solution during the exercise.

Proofs of academic achievement: oral presentation

This course is credited for „Optionalbereich“. No
This course is especially suitable for exchange students. No

Computational Neuroscience: Neural Dynamics

Language: English

Department: Institut für Neuroinformatik
Degree programme: Master
Module: Computational Neuroscience: Neural Dynamics
Module taught entirely in foreign language: yes
Course type: Lecture and Tutorial
Credit Points: 6
Teacher/Lecturer: Prof. Dr. Gregor Schöner
Requirements: none

Course description:
This course provides an introduction into the theoretical cognitive and systems neurosciences from a particular theoretical vantage point, the dynamical systems approach. This approach emphasizes the evolution in time of behavioral and neutral patterns as the basis of their analysis and synthesis. Dynamic stability, a concept shared with the classical biological cybernetics framework, is one cornerstone of the approach. Instabilities (or bifurcations) extend this framework and provide a basis for understanding flexibility, task specific adjustment, adaptation and learning.

The course includes tutorial modules which provide mathematical foundations. Theoretical concepts are exposed in reference to a number of experimental model systems which will include the coordination of movement, postural and configurational stability, the perception of motion and elementary forms of spatial cognition. In the spirit of Braitenberg´s "synthetic psychology", autonomous robots will be used to illustrate some of the ideas.

Exercises are integrated into the lectures. They consist of elementary mathematical exercises, the design of (thought) experiments and their analysis and the design of simple artificial systems, all on the basis of the theoretical framework exposed in the main lectures.

Proofs of academic achievement: written examination

This course is credited for „Optionalbereich“. No
This course is especially suitable for exchange students. No
Generative and Developmental Systems

**Language:** English

**Department:** Institut für Neuroinformatik

**Degree programme:** Master

**Module:** Name

Module taught entirely in foreign language: yes

**Course type:** Seminar

**Credit Points:** 3

**Teacher/Lecturer:** Dr. Martin Pyka

**Requirements:** none

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<td>Thursday, 10.15 - 11.45</td>
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**Course description:**

Current issues of the artificial development of structures (in particular of artificial neural networks) are discussed in this seminar. The focus is on description languages inspired by biological encoding systems (DNA, gene regulatory networks), principles of self-organization and convenient evolution strategies for the development of scalable solutions.

The participants give oral presentations, the topics of which are assigned in the first seminar.

The course is given in English upon request.

**Proofs of academic achievement:** oral presentation

This course is credited for „Optionalbereich“. No

This course is especially suitable for exchange students. No

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Machine Learning: Evolutionary Algorithms

**Language:** English

**Department:** Institut für Neuroinformatik

**Degree programme:** Master

**Module:** Name

Module taught entirely in foreign language: yes

**Course type:** Lecture and Tutorial

**Credit Points:** 6

**Teacher/Lecturer:** Jun.-Prof. Dr. Tobias Glasmachers

**Requirements:** The course is designed for Master students of the Angewandte Informatik program. The lecture "Mathematics for Modeling and Data Analysis" is recommended as a background.

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Course description:
Evolutionary Algorithms are randomized search and optimization heuristics inspired by principles of biological evolution. The field aims to exploit the principle of the "survival of the fittest" for the solution of technical problems. The resulting optimization algorithms are conceptually simple, widely applicable, and easy to implement. Evolutionary search has applications in science and engineering for the approximate solution of difficult "black box" problems.

The lecture starts by developing the basic evolutionary optimization model. Various aspects of evolutionary search in discrete and continuous search spaces are discussed in detail, resulting in a systematic taxonomy of largely modular building blocks. Finally, the evolutionary process is embedded into the theoretical framework of optimization on statistical manifolds.

The course consists of a lecture (two hours/week), which is accompanied by a practical course (also two hours/week). 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: written examination

This course is credited for „Optionalbereich“. No
This course is especially suitable for exchange students. No

Machine Learning: Unsupervised Methods

Language: English

Department: Institut für Neuroinformatik
Degree programme: Master
Module: Machine Learning: Unsupervised Methods
Module taught entirely in foreign language: yes
Course type: Lecture and Tutorial
Credit Points: 6
Teacher/Lecturer: Prof. Dr. Laurenz Wiskott
Requirements: Mathematics required include calculus (functions, derivatives, integrals, differential equations, ...), linear algebra (vectors, matrices, inner product, orthogonal vectors, basis systems, ...), and a bit of probability theory (probabilities, probability densities, Bayes' theorem, ...).

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Course description:
This course covers a variety of unsupervised methods from machine learning such as principal component analysis, independent component analysis, vector quantization, clustering, self-organizing maps, growing neural gas, Bayesian theory and graphical models. We will also briefly discuss reinforcement learning.

The mathematical level of the course is mixed but generally high. The tutorial is almost entirely mathematical.
Criteria for a certificate for the tutorial are an active participation, in particular presentation of selected exercises, and at least 50% in the final exam.

This course can be given in English upon request. Course material (lecture notes and exercise sheets) will be in English in any case.

Proofs of academic achievement: oral examination

This course is credited for „Optionalbereich“. No
This course is especially suitable for exchange students. No

INSTITUTE OF BIOCHEMISTRY AND PATHOBIOCHEMISTRY

Current issues and methods of molecular Cellbiology

Language: English

Department: Biochemistry and Pathobiochemistry/ Systems Biochemistry
Degree programme: Bachelor/ Master/ Ph.D
Module: Journals Club
Module taught entirely in foreign language: Yes
Course type: Seminar
Credit Points: 1
Teacher/Lecturer: Prof. Dr. Ralf Erdmann
Requirements: Bachelors Degree in... /...

Room
MA 4/ 139
Day, Time
Friday 12:15 – 13:45 h
Begin
biweekly

Course description:
Presentation and discussion in English language

Proofs of academic achievement: No

This course is credited for „Optionalbereich“.

Biogenesis of cell organelles

Language: English

Department: Biochemistry and Pathobiochemistry/ Systems Biochemistry
Degree programme: Master of Science Biochemistry
Module: Advanced Practical in the Focal Point Programme: “Molecular Medicine”
Module taught entirely in foreign language: no
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.

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<td>MA 4/142</td>
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**Course description:**
Active participation, feedback during independently performed experiments, project discussions with the supervisor. 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 eukaryotic 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.

**Topics:**
- Characterization of metabolite transport across the peroxisomal membrane
- Dissection of the peroxisomal protein import machinery
- Characterization of the fusion/fission machinery of peroxisomes
- Structure and function of the peroxisomal nano-machine complex Pex1p/Pex6p, two AAA-ATPases.
- The biogenesis of Lipid-droplets in yeast
- Human cell-lines as a tool to study diseases caused by an affected peroxisomal biogenesis

**Methods:**
Cultivation of Bakers yeast, Cell culture of human fibroblasts cells, Different techniques for cell breakage, Cell fractionation and isolation of cellular membranes, Separation of protein mixtures and protein complexes by SDS polyacrylamid gel electrophoresis, Western blotting and immunodetection, Size-exclusion chromatography, (convocal) fluorescence microscopy, Molecular biology (cloning, site-directed mutagenesis, gene disruption, gene replacement), Purification of recombinant proteins, Protein-protein interaction assays

**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%).

This course is credited for „Optionalbereich“.

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

**Language:** English

**Department:** Biochemistry and Pathobiochemistry/ Systems Biochemistry

**Degree programme:** Master of Science Biochemistry
Module: Modular Advanced Practical and Seminar in the Focal Point Programme "Molecular Medicine"
Module taught entirely in foreign language: yes
Course type: Compact course
Credit Points: 5,3
Teacher/Lecturer: Prof. Dr. Ralf Erdmann
Requirements: Two weeks advanced laboratory course with an integrated seminar

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Course description:
Active participation in the laboratory tasks and seminar, feedback during the experiment, participation in laboratory seminars/scientific presentation.
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. Communication and collaboration skills will be improved by working in a small team of 2-3 students advised by members of the research laboratory. Presentation skills will be improved by learning how to present scientific data in talks and scientific discussions.
Topics:
- Characterization of metabolite transport across the peroxisomal membrane
- Dissection of the peroxisomal protein import machinery
- Structure and function of the peroxisomal nano-machine complex Pex1p/Pex6p, two AAA-ATPases.

Methods:
- Cultivation of Bakers yeast
- Different techniques for cell breakage
- Cell fractionation and isolation of cellular membranes
- Separation of protein mixtures and protein complexes by SDS polyacrylamide gel electrophoresis
- Western blotting and immunodetection
- Size-exclusion chromatography

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“. 
This course is especially suitable for exchange students. No
INTERNATIONAL PHD PROGRAM IN INTERNATIONAL DEVELOPMENT STUDIES

The international English language PhD programme in International Development Studies is an interdisciplinary and structured programme. It is offered at the Institute of Development Research and Development Policy (IEE) in collaboration with the Faculties of Geography, Law, Social Science and Economics.

Teaching modules deal with developmental issues from a multidisciplinary perspective. These seminars are complemented by courses on qualitative and quantitative methods frequently used in development research.

Courses usually offered in the winter term include the Lecture Cycle “International Development Studies” in addition to seminars such as “Growth and Development”, “Political Science Perspectives on Development Policy” or “Economic Reform, Income and Poverty”.

Regularly updated information on the PhD IDS and the course structure can be found on our website http://www.development-research.org/phd-international-development-studies.html

For any further information please contact the coordinator of the PhD IDS, Dr. Anja Zorob
INTERDISCIPLINARY CENTRE FOR ADVANCED MATERIALS SIMULATION (ICAMS)

ATOMISTIC SIMULATION METHODS

Language: English

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

Degree programme: Master
Module: Atomistic Simulation Methods
Module taught entirely in foreign language: Yes
Course type: Lecture/Seminar
Credit Points: 4
Teacher/Lecturer: Prof. Dr. Ralf Drautz

Requirements: Successfully completed modules “Quantum Mechanics in Materials Science” and “Microstructure and Mechanical Properties”

Room
ICAMS seminar room and ICAMS CIP-Pool
Day, Time
Monday, 9.00-10.30 (L) and Tuesday, 16.15-17.45 (S) or Wednesday, 15.30-17.30 (S)
Begin
19/10/2015

Course description:
The students will be acquainted with models for the inter-atomic interaction and understand how these interactions can be represented by potentials. They learn how to use such molecular dynamics and kinetic Monte Carlo simulations to calculate the evolution of the atomic structure of materials and the resulting material properties. They understand the importance of the time and length scales in atomic modeling. The successful participants will be able to apply atomistic simulation methods to solve materials science problems.

Proofs of academic achievement: written examination

This course is credited for „Optionalbereich“. Yes

CONTINUUM METHODS 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: Continuum Methods in Materials Science
Module taught entirely in foreign language: Yes
Course type: Lecture with exercises
Credit Points: 4
Teacher/Lecturer: Prof. Dr. Alexander Hartmaier
Requirements: Completion of modules “Assessment and Description of Materials Properties” and “Statistical Physics and Thermodynamics” or equivalent.

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<tr>
<td>ICAMS seminar room and ICAMS CIP-Pool</td>
<td>Thursday, 12.30-15.00</td>
<td>22/10/2015</td>
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Course description:
Learning outcomes: Successful students understand the underlying principles of the finite element method to solve problems in solid mechanics with sound descriptions of the mechanical properties of materials and the phase filed method to solve free boundary problems coupled to a thermodynamic material description. Both methods represent widely-used numerical tools in industrial and academic materials science. The students develop skills to model and solve materials science problems with the help of these two methods and they also understand the limitations of the methods and where they cannot be used.

Proofs of academic achievement: written examination

This course is credited for „Optionalbereich“. Yes

ELEMENTS OF MICROSTRUCTURE

Language: English

Department: Interdisciplinary Centre for Advanced Materials Simulation (ICAMS)
Contact: mss@icams.rub.de, phone: 0234 32 29332
Degree programme: Master
Module: Elements of Microstructure
Module taught entirely in foreign language: Yes
Course type: Lecture
Credit Points: 3
Teacher/Lecturer: Jun.-Prof. Dr. Victoria Yardley
Requirements: Bachelor degree in mechanical engineering, chemistry, physics, nanotechnology, mathematics or computer science or related disciplines.

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<td>ICAMS CIP-Pool</td>
<td>Wednesday, 13.30-15.30</td>
<td>21/10/2015</td>
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Course description:
The students have a first qualitative and comprehensive view on material microstructures. They know about the specific features of amorphous and crystalline solids. Most importantly they can appreciate 0- to 3-dimensional crystal defects (vacancies, dislocations, interfaces, precipitates, inclusions, voids) as elements of microstructure and know about their basic properties (formation, thermodynamic aspects, atomistic and micromechanical aspects, influence on material kinetics and materials strength). The students also learn about basic characterization techniques (microscopy and diffraction).

Proofs of academic achievement: written examination
This course is credited for „Optionalbereich“. Yes

MULTISCALE MODELLING 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: Multiscale Modelling in Materials Science
Module taught entirely in foreign language: Yes
Course type: Lecture with exercises
Credit Points: 6
Teacher/Lecturer: Prof. Dr. Alexander Hartmaier

Requirements: Successful completion of modules “Introduction to Quantum Mechanics/Statistical Physics and Thermodynamics” or “Assessment and Description of Materials Properties”

Room: ICAMS seminar room and ICAMS CIP-Pool
Day, Time: Tuesday, 10.00-14.00
Begin: 20/10/2015

Course description:
Learning outcomes: The students gain knowledge about the different length and time scales on which the phenomena and mechanisms of material behaviour occur. They will furthermore understand the different levels to describe these phenomena and the existing approaches to bridge and integrate these scales, including their range of validity. They build up the skills to independently develop scale-bridging models that integrate all necessary scales and to employ these models to describe and predict materials behaviour under given conditions.

Proofs of academic achievement: oral examination

This course is credited for „Optionalbereich“. Yes
MEDICAL FACULTY

Immunotherapy and Prophylaxis of Infectious Diseases

Department: Department of Molecular and Medical Virology
Contact: Prof. Dr Tenbusch, 23189, Matthias.tenbusch@rub.de
Degree programme: Master/PhD
Module: Immunotherapy and Prophylaxis of Infectious Diseases
Module taught entirely in foreign language: Yes
Course type: Seminar
Credit Points: 4-5 CP
Teacher/Lecturer: Prof. Dr. Tenbusch
Requirements: Bachelor Degree in Biochemistry or Biology

Room | Day, Time | Begin
--- | --- | ---
MA 3/146 | Friday 15.15-16.45 | 23/10/2015

Preliminary meeting:
21/10/15 in Room MA 3/146 (12 p.m.)

Course description:
The seminar combines basic knowledge on infection & immunology with recent advances in the research field of therapeutic and prophylactic treatments against infectious diseases. This includes topics like T-and B-cell responses to viral infections, vaccine development or therapeutic gene-based approaches against cancer or autoimmunity. The single lectures will be divided in an introductory presentation of the lecturer followed by student’s presentations referring to recent research publications.

Proofs of academic achievement: 1x paper presentation / final oral examination

This course is credited for „Optionalbereich“. Yes

Journal Club: Sensory systems and beyond

Department: Neurophysiology / Systems Neuroscience
Contact: Prof. Klaus Funke, MA 3/151, Tel: 0234/32-23944, email: klaus.funke@rub.de
Degree programme: IGB, IGSN
Module: Sensory systems and beyond
Module taught entirely in foreign language: Yes
Course type: Journal Club/ Seminar
Credit Points: 2
Teacher/Lecturer: Prof. Patrik Krieger, Prof. Klaus Funke
Requirements:
Course description:

Presentation of scientific articles in the field of systems of neuroscience with focus on the manipulation of processes in sensory, motor and integrative systems. Registration by email to: klaus.funke@rub.de or patrik.krieger@rub.de

Proofs of academic achievement:

This course is credited for „Optionalbereich“. Yes
This course is especially suitable for exchange students. Yes

Journal Club: „Structure, Function and Plasticity of the Central Nervous System“

Language: English/...

Department: Neurophysiology
Contact: Prof. Dr. Denise Manahan-Vaughan, Tel. 0234-32-22042, email: lmr@rub.de

Degree programme: Bachelor/Master/...

Module: Structure, Function and Plasticity of the Central Nervous System
Module taught entirely in foreign language: Yes

Course type: analytical skills training in neurophysiology

Credit Points: 1

Teacher/Lecturer: Prof. Dr. Denise Manahan-Vaughan, Prof. Klaus Funke, Janna Aarse, Dr. Gleb Barmashenko, Birte Dietz, Dr. Hardy Hagena, Maximilian Hauser, Christina Strauch, Hannah Twarkowski

Requirements: Bachelors Degree in.../...

Room
MA 2/150

Day, Time
Wednesday, 4.30 p.m.

Begin
October 2015

Course description:

Proofs of academic achievement: Oral examination/written examination/...

This course is credited for „Optionalbereich“. Yes

Workshop: Basics of Immunhistochemical Staining Techniques – Specials on:
Double Fluorescent Labelling & in situ Hybridization (209 282)

Language: English

Department: Neurophysiology
Contact: Prof. Klaus Funke, MA 3/151, Tel: 0234/32-23944, email: klaus.funke@rub.de

Degree programme: IGB, IGSN
Module: Basics of Immunohistochemical Staining Techniques – Specials on: Double Fluorecent Labelling & in situ Hybridization (209 282)
Module taught entirely in foreign language: Yes
Course type: Workshop
Credit Points: 2
Teacher/Lecturer: Prof. Dr. Klaus Funke

Requirements:

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Course description:

Theory and practical courses. Registration by email to klaus.funke@rub.de

Proofs of academic achievement:

This course is credited for „Optionalbereich“. Yes
This course is especially suitable for exchange students. Yes
Publishing Details

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