INTERNATIONAL COURSE CATALOGUE

SoSe 2011

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

this is the International Course Catalogue (ICC) of the Ruhr-Universität Bochum, a project realized by RUBiss – RUB international student services at the International Office. The International Course Catalogue gives an overview on RUB’s foreign language offers – for international students who want to organise their semester programme as well as students planning on studying in Bochum or partners and guests wanting to get a general idea on RUB’s international courses and programmes.

It contains the following:

1. A list of **international (English) Master and PhD programmes**:
   RUB offers several entire degree programmes in different disciplines that are taught entirely in English. The ICC informs on content, requirements and application procedure.

2. A compilation of **seminars and lectures (Bachelor, Master and PhD) held in English or another foreign language**:
   Many departments of RUB offer seminars and lectures in English or other foreign languages. Those are usually NOT part of an international degree programme.
   The ICC gives information on the content and requirements, as well as credit points and contact persons. Also, it is stated if courses are credited for the “Optionalbereich” and if they are especially suitable for exchange students.

3. **Additional information** on studying and researching international at RUB:
   RUB’s international profile, going abroad, 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 Catalog a helpful guide for your semester programme and wish you a good start for the new semester!

Your team of RUBiss –RUB International Student Services
CONTENT

RUB’S INTERNATIONAL PROFILE .............................................................. 3
STUDYING AT RUB ................................................................................. 3
DOUBLE DEGREES ............................................................................... 4
APPLICATION AND ADMISSION .......................................................... 6
THE INTERNATIONAL OFFICE .............................................................. 7
  RUBISS – RUB INTERNATIONAL STUDENT SERVICES .................. 7
  WELCOME CENTRE FOR INTERNATIONALLY MOBILE RESEARCHERS 8
OUTGOING SERVICES ........................................................................... 9
CONTACTS ............................................................................................. 11
INTERNATIONAL MASTER PROGRAMMES ........................................ 13
INTERNATIONAL SEMINARS AND LECTURES ................................... 23
LANGUAGE COURSES .......................................................................... 91
RUB’S INTERNATIONAL PROFILE

Internationalism traditionally has a very high priority at the Ruhr-Universität. The university cooperates in research and teaching through many active partnerships with universities and research institutes around the world. Members of all departments are involved in international research networks and maintain intensive international exchange. The Ruhr-Universität is a member of the Utrecht Network, where thirty large European universities cooperate on issues of internationalisation. Also beyond the European continent, the university has a high profile. Examples of this global commitment: in Shanghai the Ruhr-University supports the department of mechanical engineering at the Chinese-German University College at Tongji University, it is actively involved in academic reconstruction in Afghanistan, offers various degrees in South Africa at the South African-German Centre for Research Development and Criminal Justice at University of the Western Cap, Capetown, and together with its Ruhr university neighbours, is running liaison offices in New York and Moscow.

More than 4,500 international students from some 130 countries are currently at the Ruhr Universität – they appreciate the modern degree structures, the variety of subjects, the interesting cross-border research projects and the good support services on campus. Every year, the university welcomes some 300 visiting scholars from around the world, including a high number of scholarship holders from the Humboldt Foundation, and other renowned scientists. At five international graduate schools, doctoral students from around the world practice their research.

For students who wish to spend part of their degree abroad, the Ruhr-Universität also offers a host of opportunities. In exchange programmes with European partner universities alone, with over 350 collaborations from Finland to Italy and from Turkey to Portugal, there are places to study abroad in all degree courses. The number of Socrates/Erasmus students has doubled over the last five years, and the number of mobile students will continue to grow – facilitated by: expert advice on studying abroad, the further development of interesting degree courses with bi-national dual degree qualification and the extension of exchange agreements already actively underway.

STUDYING AT RUB

In the middle of the metropolitan Ruhr region in the heart of Europe, the Ruhr-Universität with its 20 faculties is home to 5,000 employees and over 31,000 students from 130 countries. The university was opened in 1965 after a construction period of only three years. It was the first new university to be established in Germany following the Second World War and was also the first university in the Ruhr area altogether. Today, it is one of the ten biggest universities in Germany.

The Ruhr-Universität offers research facilities and teaching in all major academic disciplines: humanities, natural sciences, engineering and medicine are all together on one campus. The university’s greatest strength is its interdisciplinary cooperation, and there are a lot of special interdisciplinary and international Bachelors and Masters programmes for you to choose from. Altogether, the RUB offers approximately 150 bachelors and masters programmes in various combinations. The range of subjects is even bigger as the Ruhr-Universität cooperates with its neighbouring universities Dortmund and Duisburg-Essen to form the University Alliance Metropolis Ruhr (UAMR), and students can choose courses from all three universities.

The RUB changed to the Bachelors/Masters system before any other German university and therefore almost all degree programmes are offered with the Bachelors and Masters qualifications. Within your Bachelors studies, when choosing humanities or social sciences, you will usually study two subjects, while in natural and engineering sciences Bachelor programmes usually
consist of just one subject.

If you are enrolled in subjects at the Ruhr-Universität Bochum in the areas of humanities and social or natural sciences, you will also have to attend courses in the "options modules" (Optionalbereich), in addition to the subjects you have chosen. Therefore, courses that are credited for the “options modules” are marked in the International Course Catalogue.

DOUBLE DEGREES

Numerous double degree programmes provide the opportunity to obtain the degree of a partner university alongside the RUB-degree:

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.

Contact:
Name: Prof. Dr. Gerhard Lubich
Email: Gerhard.lubich@rub.de
Or:
Name: Stephanie Caspari
Email: Stephanie.b.caspari@rub.de

Double Degree in Philology with Universidad Oviedo
Without prolonging their studies, and 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.

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

Double 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

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 for three semesters.

Contact:
Name: Prof. Dr. Bernahrd Pellens
Email: pellens@iur.rub.de

Double Master's Degree of the Faculty of Mechanical Engineering with the CDHK at Tongji University, Shanghai
Double degree in production techniques that can be obtained by German and Chinese students (studying at both locations).

**Contact:**
Name: Prof. Dr.-Ing. Horst Meier  
Email: Meier@ips.rub.de

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

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: Julia Figdor  
Email: GenderStudies@rub.de

**Double Degree in Law with Université François Rabelais Tours**

Both double Bachelor's and double Master's degree, starting from WiSe 2011/12. The students spent two semesters together in Bochum and two in Tours. The awarded degree is "Bachelor" (RUB) and "Licence" (Tours) or "Master" in both Tour and Bochum.

**Contact:**
Name: Norman Heenemann  
Email: Norman.Heenemann@rub.de  
Or:  
Name: Véronique Müller  
Email: Veronique.Mueller@rub.de

**Double Degree in Philology with Université François Rabelais Tours**

Students of both partner universities can spend the last year of their studies at the partner institution. At the successful completion of their studies, the students are awarded a Master's degree of both RUB and Université Tours.

**Contact:**
Name: Jürgen Niemeyer  
Email: Juergen.Niemeyer@rub.de  
Consultation hours: Tuesday and Friday, 10.00-11.00 a.m.

**Double Degree in German Studies with Universiteit Utrecht**

By means of a partnership contract, it is possible to obtain degrees from both partner universities at the same time, without prolonging ones studies. It is possible to obtain a Bachelor’s as well as a Master's degree. Students taking part in teacher training programmes can make use of this option as well.

**Contact:**
Name: Prof. Dr. Bernd Bastert  
Email: Bernd.Bastert@rub.de  
Or:  
Name: Manfred Eickelmann  
Email: Manfred.Eickelmann@rub.de
APPLICATION AND ADMISSION

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

Your higher education entrance qualification must be recognised as the equivalent to the German qualification. Your higher education entrance qualification (HZB) is your school leaving certificate or a proof of studies already completed. To qualify for admission at RUB, you must be able to prove that you have got a HZB for a German university.

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

Also, for most degree programmes, you need sufficient German skills. An exception are the International degree programmes stated in the first chapter of this brochure. Those Programmes have individual application procedures.

For successful studies in a regular course at the Ruhr- University, a high standard of German language skills are required. Language skills can be proven by one of the following examinations:

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

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

Application procedure can differ, depending on the country you are coming from and the subject you are planning to study at the RUB.

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

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

The International Office (IO) is responsible for all aspects of the University's international contacts and activities. It fosters and coordinates the university's international relationships, builds contacts with partner universities and handles projects and programmes with foreign partners. In addition, it supports university faculties and chairs in building international relationships. Whilst the team from RUBiss looks after international students, the "Welcome Centre" was established to support international visiting academics. RUB students who want to go abroad as part of their studies, are also advised by the International Office.

RUBISS – RUB 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 – RUB international student services" was established and now combines all provisions and services for international students of the International Office. As well as support in the application and admission process or with administrative tasks and legal affairs concerning foreign nationals, you will find contact persons for other important issues which go beyond your academic studies, such as e.g. advice and support in social, cultural and study related affairs – there is always a sympathetic ear for you at RUBiss.

Both at the beginning of and during the semester, events are organised: On various excursions, you will have the opportunity to get to know your new surroundings, to settle in and to meet fellow students. Tutors and members of the RUBiss team are present at these events and are available to answer all of your questions in a relaxed atmosphere. RUBiss also provides offers that may be useful for your studies or your future career: During the last year, two new projects were started that get funding by the DAAD: „Praktika international“ and the “Rechtschreibkorrekturbüro”.

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.
WELCOME CENTRE FOR INTERNATIONALLY MOBILE RESEARCHERS

Ruhr-Universität has set up a service point for internationally mobile researchers in order to make your stay with us as pleasant as possible for you and your family. The Welcome Centre in Bochum is registered as “local service point” in the EURAXESS network.

We are here to help you with all the necessary formalities and advise you on matters of everyday life in Germany. Our portfolio of services includes:

- Internet portal in German and English
- Helping you find accommodation
- Check lists for preparing your stay and negotiating the first few days after arrival
- Advice on formalities (visa, registration, health insurance)
- Supporting you in your dealings with the authorities
- Assistance in finding a kindergarten or school for your children
- International Lounge for visiting researchers
- Excursions and events for visiting scientists and scholars
- German courses at various levels

On our website you will find regularly updated information and links which should help you to organize your stay and manage everyday life. We also post information on current events and offers.

Please do not hesitate to turn to the team at the Welcome Centre if you have any questions, problems, wishes or suggestions. You can reach us by email, telephone or in person.

Just get in touch – we are here to help you!

Welcome Centre, International Office
Ruhr-Universität Bochum
FNO-Building

Email: welcome-centre@rub.de
www.rub.de/welcome-centre
OUTGOING SERVICES

Students who want to go abroad as part of their studies are advised at the Outgoing Services. On their website, you will find information on studying and internships abroad, summer academies and language courses. You will get hints on organization, contact persons and financing.

RUB-students who want to study abroad can take part in the ERASMUS programme, in which RUB has some 244 partner universities, where students can spend 3 to 12 months, supported by a monthly mobility scholarship and many other benefits. The ERASMUS programme also supports students who are doing a relevant internship in a country taking part in the ERASMUS programme.

For those wanting to study outside Europe, the International Office has different partner universities, where students can study one or two semesters without paying tuition fees. There are university wide partnerships with the following universities:

- Universidade Federal de Minas Gerais, Brazil
- Universidad de Monterrey, Mexico
- Universidad Autónoma de Nueva León, Mexico
- Universidad Autónoma Metropolitana, Mexico
- Universidad Católica del Norte, Chile
- Lindenwood University in St. Charles, Missouri, USA
- National Taiwan University, Taiwan
- Ewha Womans University, Korea
- Kyungpook National University, Korea

The following universities provide RUB-students with a monthly scholarship in addition:

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

As a member of the Utrecht Network, RUB can offer exchange with the following universities in the course of the MAUI and AEN exchange programme:

MAUI-Exchange-Programme:

<table>
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<tr>
<th>Baylor University Waco, TX</th>
<th>University of Missouri Columbia, MO</th>
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<tr>
<td>Kansas State University Manhattan, KS</td>
<td>University of Missouri Kansas City, MO</td>
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<tr>
<td>Missouri University of Science &amp; Technology, Rolla, MO</td>
<td>University of Missouri St. Louis, MO</td>
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<tr>
<td>Oklahoma State University Stillwater, OK</td>
<td>University of Nebraska Kearney, NE</td>
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<tr>
<td>Southern Illinois University at Carbondale, IL</td>
<td>University of Nebraska Lincoln, NE</td>
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A new worldwide programme supplementing the ERASMUS programme is PROMOS. In 2011, the International Office will offer 4 sub programmes, by which studying at partner universities of RUB, internships, study trips and stays for writing a final thesis can be supported. The PROMOS programme supports stays outside the ERASMUS-countries.

Outgoing Services, International Office
Ruhr-Universität Bochum
FNO-Building

Email: veronika.fuckel@uv.rub.de
www.international.rub.de/ausland
## CONTACTS

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<tr>
<th>Name</th>
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<tr>
<td><strong>Office</strong></td>
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</table>
| Isolde Hausmann  | **Room:** FNO 01/184  
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E-Mail: Isolde.Hausmann@uv.rub.de  
Consultation Hours: Mon - Fri, 9 - 12 a.m. & 1:30 - 4 p.m. |
| **Directors**    |                                              |
| Monika Sprung    | **Room:** FNO 01/182  
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| Jutta Schmid     | **Room:** FNO 01/186  
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E-Mail: Jutta.Schmid@uv.rub.de  
Consultation Hours: By appointment |
| **Application and Admission** |                                      |
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Consultation Hours:  
Mon - Thu: 9 a.m. - 1 p.m. & 2 p.m. - 4 p.m.  
Fri: 9 a.m. - 1 p.m. & 2 p.m. - 3 p.m. |
| Angelika Tatang  | **Room:** FNO 01/ 171  
Tel.: +49 (0) 234 32- 23739  
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| **Rubiss- RUB International Student Service** |                                      |
| Elena Díaz       | **Room:** FNO 01/180  
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Consultation Hours: By appointment |
| Ruthild Schulte  | **Room:** FNO 01/174  
Tel.: +49 (0)234 32-25899  
E-Mail: Ruthild.Schulte@uv.rub.de  
Consultation Hours: Mon- Thu, 10- 12 a.m. |
| Sarah Stücken    | **Room:** FNO 01/176  
Tel.: +49 (0)234 32-27676  
E-Mail: Sarah.Stuecken@uv.rub.de  
Consultation Hours: Mon-Fri 10- 12 a.m. & 2- 3.30 p.m. |
### Outgoing Services

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<tr>
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<td><a href="mailto:Veronika.Fuckel@uv.rub.de">Veronika.Fuckel@uv.rub.de</a></td>
<td>Mon, 3-5 p.m. &amp; Tue-Thu 10.30 a.m.-12.30 p.m.</td>
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### Welcome Centre

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<tr>
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</tr>
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<td><a href="mailto:Serpil.Yokus@uv.rub.de">Serpil.Yokus@uv.rub.de</a></td>
<td>By appointment</td>
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### Internationalisation

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<tr>
<td>Ulrike Herrlich</td>
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<td><a href="mailto:Ulrike.Herrlich@uv.rub.de">Ulrike.Herrlich@uv.rub.de</a></td>
<td>By appointment</td>
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INTERNATIONAL MASTER PROGRAMMES

The following chapter contains RUB’s international Master and PhD programmes that are taught entirely in English.

FACULTY OF CHEMISTRY AND BIOCHEMISTRY ................................................................. 14
  MASTER OF BIOCHEMISTRY ..................................................................................... 14
  MASTER OF CHEMISTRY ....................................................................................... 15
COMPUTATIONAL ENGINEERING .................................................................................... 16
  COMPUTATIONAL ENGINEERING ........................................................................ 16
INSTITUTE OF DEVELOPMENT RESEARCH AND DEVELOPMENT POLICY .................. 17
  PHD IN INTERNATIONAL DEVELOPMENT STUDIES .............................................. 17
  MASTER OF ARTS IN DEVELOPMENT MANAGEMENT ........................................... 18
FACULTY OF GEOSCIENCES........................................................................................... 19
  MS.C. RESOURCES AND ENERGY (GEOSCIENCES)................................................ 19
INSTITUTE FOR INTERNATIONAL LAW OF PEACE AND ARMED CONFLICT ........... 20
  JOINT EUROPEAN MASTER’S IN INTERNATIONAL HUMANITARIAN ACTION .... 20
FACULTY OF CHEMISTRY AND BIOCHEMISTRY

http://www.chemie.rub.de

Contact:
Name: Dr. Manfred Groß
Room: NC 02/128
Tel: 0234/32-24571
Email: chemie@rub.de

MASTER OF BIOCHEMISTRY

Language: English

Degree programme: MSc

Requirements: A qualified BSc (= a BSc with an average mark better than 2.5) in Biochemistry or a related subject, such as Molecular Biology, Biotechnology, Chemical Biology, or Chemistry with a major in Biochemistry)

Application Deadline: deadline for international students: 15/07/11

Begin: 10/10/2011

Course description:

The Master Course in "Biochemistry" builds on the foundations laid by a BSc in Biochemistry or a related subject. It constitutes the second step towards a comprehensive education and training in the sciences and methods necessary to understand and exploit the molecular and chemical basis of biological and physiological processes. The goal of this course is to enable the student to independently apply the theoretical and technical knowledge gained to tackle and solve open questions in the life sciences, either in academia or in industry.

To reach this goal students will receive up to 26 hours of teaching per week over a period of 3 semesters, a total of 77.5 hours, comprising 16 hrs of lectures, 12 hrs of seminars, and a full 49.5 hrs of practicals. In the fourth semester experiments for the Master thesis project will be performed with the goal to submit a thesis after 6 months.

A unique feature of the MSc Biochemistry in Bochum is the possibility to choose between six Focal Point Programmes in which all courses, starting with the 2nd semester, are geared towards a topic chosen at the end of the first semester. Available topics include a) Biochemistry of the Nervous System, b) Biomolecular Chemistry, c) Molecular Medicine, d) Proteins: Structure and Function, e) Molecular Biology and Biotechnology of Plants and Microorganisms and f) Stem Cell Biochemistry.

Further highlights of this Master Course include compulsory practical training in experimental approaches that use isotopes, a course that in addition to credit points yields a federal certificate required for Radiation Safety Officer duties in academia and industry; and a practical course in the handling of experimental animals, which is conducted in collaboration with the company Bayer HealthCare at their premises in Wuppertal.

The Faculty of Chemistry and Biochemistry appreciates if their Master students choose to spend one or more semesters abroad. The faculty supports this choice by unbureaucratically accepting courses taken abroad as equivalent if they fit the general philosophy of the Master Programme in Biochemistry at RUB.
MASTER OF CHEMISTRY

Degree programme:  MSc

Requirements:  A qualified BSc (= a BSc with an average mark better than 2.5) in Chemistry or a related subject

Application Deadline:  for international students: 15/07/11

Begin:  10/10/2011

Course description:
The Master Course in "Chemistry" builds on the foundations laid by a BSc in Chemistry or a related subject. It constitutes the second step towards a comprehensive education and training in chemistry comprising all aspects from organic and inorganic synthesis to physical and theoretical descriptions of chemical reactions. The goal of this course is to enable the student to independently apply the theoretical and technical knowledge gained to tackle and solve open questions in chemistry, either in academia or in industry. To reach this goal students will receive a research orientated education comprising lectures and seminars but also, to a large extent, practicals. The first and second semester aim to provide an in depth-understanding in inorganic chemistry, organic chemistry and physical chemistry through lectures as well as a practicals in selected disciplines. The third semester allows the students to select a specialization practical including a 3-month practical. In the fourth semester experiments for the Master thesis project will be performed with the goal to submit a thesis after 6 months. A unique feature of the MSc in Chemistry at the Ruhr-University Bochum is the possibility to choose between a number of focal point programmes as specialization including organic, inorganic, physical, analytical, industrial ("Technische Chemie") and theoretical chemistry as well as interdisciplinary programmes such as functional materials. The practicals are mainly performed in the different research groups using state of the art research equipment thus guiding the students into research at an early stage. The research groups with PhD students and PostDocs from all over the world provide the basis for an education in an international environment. The Faculty of Chemistry and Biochemistry appreciates if their Master students choose to spend one or more semesters abroad. The faculty supports this choice by unbureaucratically accepting courses taken abroad as equivalent if they fit the general philosophy of the Master Programme in Chemistry at RUB.
COMPUTATIONAL ENGINEERING

http://compeng.rub.de

Contact:
Name: Dipl.-Ing. Jörg Sahlmen
Room: IA 0/66
Tel: 0234/32-22103
Email: comp-eng@rub.de

Julia Lippmann, M.A.
IA 0/42
Tel: 0234/32-25485
Email: julia.lippmann@rub.de

Degree programme: MSc

Requirements: A B.Sc. or comparable degree in an engineering sciences subject; profound
English language skills, both written and spoken

Application Deadline: deadline for international students: 01/05/11
Begin: 10/10/2011

Course description:
The master’s programme Computational Engineering focuses on the consolidation of knowledge in
computer-oriented methods of Engineering Sciences. It provides to students key-skills in engineering
mechanics, mathematics and computer science required for innovatively designing and analysing high-
tech engineering systems and materials. Besides, the programme conveys so-called soft skills like the
capacity for teamwork, the ability to manage conflict situations, and communication skills. It is exactly this
unique blend of computer- and engineering-related knowledge with these soft skills which accounts for the
high academic standard of the programme. The programme is thus especially designed to qualify students
for the requirements of today’s job market for engineers, opening them the doors to upper and top
positions in the industry and at institutions of higher education.

The master’s programme Computational Engineering has the following goals:
• The imparting of skills in the field of computer-oriented methods in Engineering Sciences to qualify
students to perform complex tasks with an emphasis on simulation and modelling independently and
on their own responsibility. The master’s programme thus qualifies students for positions in research
and development with managerial responsibility.
• The imparting of skills for writing academic theses on a post-graduate level.

In addition, the programme is aimed at enabling graduates to solve challenging problems in research and
practice. At the same time, it aims at opening them the doors to various occupational fields on the
international job market on the basis of ‘global competencies’. In order to achieve these goals great
emphasis is placed on research.

In its concept, the RUB Master programme is designed so as to include courses offered by various
faculties, mainly the faculties of Civil- and Environmental Engineering (course coordination), Mechanical
Engineering and Mathematics to offer students a highly sophisticated education, breeding tomorrow’s
specialists and executives.

For further details about our courses please go to: http://compeng.rub.de: Sub-item ‘Curriculum’
PHD IN INTERNATIONAL DEVELOPMENT STUDIES

Language: English

Degree programme: PhD

Requirements: 1. Qualified university degree (Master or an equivalent to the German Diploma or Staatsexamen) with an overall grade equivalent to 2.7 (fully satisfactory) in the German grading system after completion of relevant studies with a duration of at least 4 years, or 2. Qualified degree with an overall grade equivalent to 1.7 (fully good) in the German grading system after completion of relevant studies with a duration of at least three years plus preparatory studies for the PhD of usually three semesters. For international degrees the equivalence will be judged during the application process. Candidates who have to follow preparatory studies before admission to the PhD in International Development Studies can be accepted for such preparatory studies at the Ruhr-University Bochum.

Course description:

Starting from winter 2007, the Institute of Development Research and Development Policy offers a 3-year English-language PhD program in International Development Studies. It is implemented by the Institute of Development Research and Development Policy on behalf of the Faculties of Geography, Law, Social Science, and Economics. Annually up to 12 PhD candidates are accepted to the program. The PhD program in International Development Studies is a combination of working on individual PhD research projects as well as participating in selected teaching modules. Teaching modules deal with developmental issues from a multidisciplinary perspective. These seminars are complemented by courses on research methods and statistical analysis. Regular presentation and discussion of individual research projects form part of the semi-annual „Research Colloquium“ in which all PhD candidates as well as supervisors take part. A field research phase in the fourth semester forms an integral part of the PhD-program. Courses on “Generic Skills” include seminars on Scientific Writing, Scientific Presentation and Professional (Scientific) Communication. They aim at the training of key competences and are offered in cooperation with the Ruhr-University Bochum Research School.
MASTER OF ARTS IN DEVELOPMENT MANAGEMENT

Degree programme: Master

Requirements: An above average B.A. or relevant degree in political science, social science, law, economics or geography or in other subjects related to the planning and evaluation of development programs and projects career experience in a relevant field; preference is given to candidates whose employers offer a reintegration guarantee. For DAAD scholarship applicants within the program “postgraduate courses with relevance to developing countries” at least two years career experience is required, other applicants shall demonstrate practical experience at least through a relevant internship. Minimum certified proficiency in written and spoken English -TOEFL: 79-80 points internet based (equivalent to 213 points computer based or 550 paper based) or IELTS: band 6

Application Deadline: 31/12/2011

Begin: September 2011

Course description:

The MADM is addressed to young professionals from all over the world with a B.A. or relevant degree and practical experience with relevance for development management who need further academic qualification for their future professional career in a field related to development management and cooperation. Since winter 2000, the Institute of Development Research and Development Policy has offered an international English-language Master Program in Development Management. Since May 2002, the program has also been offered at the University of the Western Cape, South Africa; originally as part of the DAAD initiative “German Programs of Study Abroad” and now as part of the DAAD funded “South African - German Centre for Development Research and Criminal Justice”. The duration of each program cycle is three semesters (18 months). For each intake, up to 25 students are accepted in Bochum and up to 20 students in Cape Town.

The course starts every two years with the next intake in 2010. For international participants a German language course is offered from beginning of August. The program itself starts in September with a Summer School on Research Methods and Development Practice. In this introductory Summer School you will also meet with the students from the Cape Town intake, who started earlier and have by than already completed their first semester. Apart from coursework the Summer School usually includes a seminar on Inter-cultural Communication and Team Building as well as some excursions for you to get more familiar with Bochum, the region and Germany.

Proofs of academic achievement: n.s.
FACULTY OF GEOSCIENCES
INSTITUTE FOR GEOLOGY, MINERALOGY AND GEOPHYSICS

www.rub.de/sediment

Contact:
Name: Prof. Dr. Adrian Immenhauser
Room: NA 2/125
Tel: 0234/32- 0234/32-28250
Email: adrian.immenhauser@rub.de

MS.C. RESOURCES AND ENERGY (GEOSCIENCES)

Language: English

Degree programme: MSc

Requirements: B.Sc. in geosciences or related natural sciences, English language proficiency (written and spoken), and sufficient physical fitness to perform fieldwork

Application Deadline: 15/07/2011 for international students

Begin: 10/10/2011

Course description:
The Institute for Geology, Mineralogy and Geophysics offers a comprehensive two-year (four terms) M.Sc. programme in fundamental and applied geosciences.
The goal of this M.Sc. programme is to provide students with a solid background in geoscience disciplines that are particularly relevant for a subsequent employment in the industry (mainly hydrocarbon industry).
Main topics covered include sedimentology/stratigraphy, geophysics/seismic interpretation and structural geology/tectonics.
Additional topics include aspects of geo-engineering and hydrogeology.
Frontal class room instructions are complemented by practical laboratory courses and hands-on field training.
JOINT EUROPEAN MASTER’S IN INTERNATIONAL HUMANITARIAN ACTION

Language: English

Degree programme: Master of Arts in Humanitarian Action

Requirements: Master’s degree or equivalent

Application Deadlines:
- ERASMUS MUNDUS 15/12/2010
- NOHA and NOHA Mundus 15/03/2011

Begin: First week of September with the Intensive Programme (IP)

Course description:

The Joint European Master’s in International Humanitarian Action is an inter-university, multidisciplinary postgraduate programme that provides high quality academic education and professional competencies for personnel working or intending to work in the area of humanitarian action. This European Master’s Degree was created in 1993 as a result of concerted efforts on the part of the Network On Humanitarian Action (NOHA) Universities, working in close collaboration with the European Commission’s Humanitarian Aid Office (ECHO) and Directorate-General for Education and Culture. This initiative was a response to a growing need from the humanitarian assistance community for higher educational qualifications specifically suited to addressing complex humanitarian emergencies. In addition to collaboration and support from the European Union, the programme has the backing of nongovernmental organisations (NGOs), inter-governmental organisations (IGOs), and other actors of the humanitarian relief community with whom the Network has strong collaborative links.

More than 15 years of experience have proved the Network’s capacity to educate and train highly committed, interdisciplinary persons who can act at all levels of humanitarian relief operations and who can function in a variety of ways to enhance the delivery of humanitarian assistance and sustainable actions. Over 1800 NOHA graduated professionals work in the field of humanitarian relief and international co-operation as managers, administrators, researchers, evaluators, monitors, consultants, and representatives of international organisations and institutions. They hold positions of responsibility in all kinds of national and international intergovernmental and non-governmental organisations both in the field and at headquarters all around the world.
MATERIALS SCIENCE AND SIMULATION

Degree programme: MSc

Requirements: Bachelor (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, or Computer Sciences

Application Deadline:

Visa required: 15 March for winter term / 15 September for summer term (short track)

No visa required: 15 March for summer term (short track)/ 15 September for winter term

Begin: summer term: 04/04/2011 (preparatory courses for short track: 21/03/2011)

winter term 2011/12: 10/10/2011

Course description:

Maintaining and expanding societies' industrial and economic capacity has become increasingly dependent on the rapid availability of sophisticated materials designed for extreme conditions. At the same time, the life-cycles of materials have become shorter due to frequent adaptation to, or even new design for, specific requirements and environments. Advanced computer simulation has been established as a key tool for increasing the speed of materials development at reduced costs and will gain a wide importance in academic and industrial research and development.

The Master of Science programme „Materials Science and Simulation“ meets the need for material scientists trained in numerical simulation as well as experimental characterization and processing techniques. Moreover, theoretical and practical knowledge in numerical methods has proven to be one of the most decisive key qualifications of nationally and internationally successful materials scientists and this development is still to continue. The programme focuses on providing you with a thorough knowledge in materials science and hands-on experience with state-of-the-art numerical methods. Furthermore it will enable you to apply your practical skills and knowledge in experimental settings already during your studies.
In detail, the programme will provide you with:

- a comprehensive knowledge of materials science, physics and numerical methods
- practical experience and the necessary theoretical background in applying modern numerical and experimental methods on all relevant scales
- competence to plan and conduct key experiments in modern characterization and processing techniques
- the ability to apply advanced modelling and simulation methods
- the build-up of research competence by planning and conducting student research projects
- a thorough understanding of the interrelation between processing, structure and properties of materials
- hands-on experience in project-oriented teamwork, project management skills and interdisciplinary communication.

The Masters course combines compulsory lectures in materials science, physics, numerical methods on different length and time scales, and programming techniques. In the specialization areas lectures can be selected from the fields “modelling and simulation” or “processing and characterization.” The lectures typically combine teaching of the theoretical background with the practical application of the gained knowledge in terms of computer models or lab experience. First practical research experience is gained from the research project scheduled in the third semester. Furthermore, the complete fourth semester is dedicated to the Masters thesis project. A complete course description can be downloaded from www.icams.de/mss.
INTERNATIONAL SEMINARS AND LECTURES

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

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

FACULTY OF BIOLOGY AND BIOTECHNOLOGY......................................................................................................... 24
COMPUTATIONAL ENGINEERING .............................................................................................................................. 36
INSTITUTE FOR DEVELOPMENT RESEARCH AND DEVELOPMENT POLICY .................................................. 46
FACULTY OF ECONOMICS ............................................................................................................................................. 50
FACULTY OF GEOSCIENCE .......................................................................................................................................... 61
INTERDISCIPLINARY CENTRE OF ADVANCED MATERIALS SIMULATION (ICAMS) ...................................... 66
FACULTY OF LAW ............................................................................................................................................................... 69
FACULTY OF MATHEMATICS .......................................................................................................................................... 71
MEDICAL FACULTY .............................................................................................................................................................. 72
INST. PHYSIOLOGY ................................................................................................................................................. 72
DEPARTMENT OF NEUROLOGY, ST. JOSEF HOSPITAL: .............................................................................................. 73
INSTITUT OF ANATOMIE ............................................................................................................................................. 74
INSTITUTE FOR NEUROINFORMATICS ............................................................................................................................. 75
FACULTY OF PHILOLOGY ................................................................................................................................................... 77
ENGLISH DEPARTMENT ............................................................................................................................................. 77
FACULTY OF PHILOSOPHY AND EDUCATION ............................................................................................................. 78
PHILOSOPHY DEPARTMENT .................................................................................................................................... 78
INSTITUTE OF EDUCATIONAL SCIENCE .................................................................................................................... 82
FACULTY OF PHYSICS AND ASTRONOMY ................................................................................................................... 84
FACULTY OF PSYCHOLOGY ............................................................................................................................................. 86
FACULTY OF SPORTS SCIENCE ..................................................................................................................................... 90
FACULTY OF BIOLOGY AND BIOTECHNOLOGY

http://www.biologie.ruhr-uni-bochum.de/

Contact:
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Email: studienberatung-biologie@rub.de
Consultation hours: Mo - Thur: 9 - 11 h

SCIENCE MEETING / MITARBEITERSEMINAR: AKTUELLE FORSCHUNGSPROJEKTE

Language: English

Department: Faculty of Biology and Biotechnology, Geobotany
Degree programme: -
Module: Science Meeting
Course type: Seminar
Credit Points: 1
Teacher/Lecturer: Prof. Dr. Dominik Begerow
Requirements: Own research in the field of Evolutionary Mycology

Room
ND 03 / 172
Day, Time
Wednesday, fortnightly
14:00 – 15:00
Begin
by arrangement

Course description:
Exchange on research concepts, progress report and discussion of new results.

Proofs of academic achievement: none

190 589 RESEARCH ACTIVITIES / PROGRESS REPORTS

Language: English

Department: Animal Physiology
Degree programme: n.s.
Module: n.s.
Course type: colloquium
Credit Points: n.s.
Teacher/Lecturer: Prof. Dr. H. Lübbert, colleague
Requirements: n.s.
International Seminars and Lectures

Course description:

Colloquium about research activities in the department of Animal Physiology. See also: http://www.ruhr-uni-bochum.de/tierphys/index_en.htm

ADVANCED TUTORIAL (S-MODULE): AXON GENERATION AND SYNAPTOGENESIS (190 372)

Language: ger/eng

Department: Cell Morphology and Molecular Neurobiology
Degree programme: BSc / MSc
Module: n.s.
This module is taught entirely in English.
Course type: practical course
Credit Points: 15
Teacher/Lecturer: Prof. Dr. A. Faissner

Requirements: GMP passed; basic module in cell or neurobiology, biochemistry or microbiology passed; lecture in cell or neurobiology attended

Course description:
The module addresses the molecular basis of axon generation and synaptogenesis. The focus lies on the influence of the extracellular matrix. Issues are inter alia the primary culture of neurons from different brain regions and of glial cells and the culture of defined glial cell lines. The analysis is based on immunocytoology and the use of immunofluorescence techniques, biochemical studies and the characterization of expressed genes, Western blot, immunoprecipitation and the biochemical and molecular characterization of the extracellular matrix.

Proofs of academic achievement: seminar, written protocol
ADVANCED TUTORIAL (S-MODULE): NEURON-GLIA BIOLOGY AND SYNAPTIC PLASTICITY (190 373)

Language: ger/eng

Department: Cell Morphology and Molecular Neurobiology
Degree programme: BSc / MSc
Module: n.s.
This module is taught entirely in English.
Course type: practical course
Credit Points: 15
Teacher/Lecturer: Prof. Dr. A. Faissner, M. Geissler

Requirements: GMP passed; basic module in cell or neurobiology, biochemistry or microbiology passed; lecture in cell or neurobiology attended

Room Day, Time Begin
according to prior agreement

Course description:
The module addresses the molecular basis of the interaction between neurons and glia cells. The focus lies on the influence of the extracellular matrix. Issues are inter alia the primary culture of neurons from different brain regions and of glial cells and the culture of defined glial cell lines. Long-term cultures are used to analyse synaptic plasticity under defined conditions. The analysis is based on immunocytochemistry and the use of immunofluorescence techniques, biochemical studies and the characterization of expressed genes, Western blot, immunoprecipitation and the biochemical and molecular characterization of the extracellular matrix.

Proofs of academic achievement: seminar, written protocol

ADVANCED TUTORIAL (S-MODULE): TRANSCRIPTION FACTORS AND REGULATION OF NEURAL STEM CELLS (190 374)

Language: ger/eng

Department: Cell Morphology and Molecular Neurobiology
Degree programme: BSc / MSc
Module: n.s.
This module is taught entirely in English.
Course type: practical course
Credit Points: 15
Teacher/Lecturer: Prof. Dr. A. Faissner, Dr. U. Theocharidis

Requirements: GMP passed; basic module in cell or neurobiology, biochemistry or microbiology passed; lecture in cell or neurobiology attended
Course description:
The module addresses the molecular basis of gene regulation of neural stem cells. The focus lies on the influence of the extracellular matrix of the developing nervous system and the regulation of matrix proteins. Issues are inter alia the primary culture of stem cells of the nervous system and their immunocytochemical and molecular biological analysis. Expression studies and genetic manipulations are carried out. In addition to histochemical studies an analysis of the developing nervous system and the neural stem cell niches will be performed. Transcription factors in neural development and the proteins of the extracellular matrix are in the focus.

Methods: Preparation of neural tissue for cell culture, video microscopy, immunocytochemistry with application of fluorescence techniques, RT-PCR, Western blot, in situ hybridization, immunohistochemistry, dot blot in vitro hybridization, Southern blot, chromatin immunoprecipitation, Dual-Luciferase Promotor Assay, cloning, plasmid purification, transfection

Proofs of academic achievement: seminar, written protocol

This course is especially suitable for exchange students.

ADVANCED TUTORIAL (S-MODULE): ANALYSIS OF PROTEIN TYROSIN PHOSPHATASES IN NEURAL STEM CELLS (190 375)

Language: ger/eng

Department: Cell Morphology and Molecular Neurobiology
Degree programme: BSc / MSc
Module: n.s.
This module is taught entirely in English.
Course type: practical course
Credit Points: 15
Teacher/Lecturer: Prof. Dr. A. Faissner, J. Reinhard

Requirements: GMP passed; basic module in cell or neurobiology, biochemistry or microbiology passed; lecture in cell or neurobiology attended

Course description:
The module deals with cell and molecular biological studies on the development of the visual system and neural stem cells of mammals. One focus is the role of Phosphotyrosinphosphatases in this context. It will cover following items: primary culture of neural stem and retinal ganglion cells, culture defined glial cell lines, immunocytochemistry with defined neural antigens in the visual system and the brain, using immunofluorescence techniques, fluorescence and confocal laser microscopy.
scanning microscopy, biochemical studies, characterization of expressed genes, Western blot, immunoprecipitation, biochemical and molecular characterization of receptor phosphotyrosine phosphatases in neural stem cells and the visual system, transfection and ectopic expression of PTPs, functional assays in co-culture systems and the analysis of functions and properties of retinal stem cells.

Proofs of academic achievement: seminar, written protocol

ADVANCED TUTORIAL (S-MODULE): INFLUENCE OF ECM MOLECULES ON SYNAPTogenesis (190 377)

Language: ger/eng

Department: Cell Morphology and Molecular Neurobiology
Degree programme: BSc / MSc
Module: n.s.
This module is taught entirely in English.
Course type: practical course
Credit Points: 15
Teacher/Lecturer: Prof. Dr. A. Faissner, Dr. T. Sobik

Requirements: GMP passed; basic module in cell or neurobiology, biochemistry or microbiology passed; lecture in cell or neurobiology attended

Room Day, Time Begin
according to prior agreement

Course description:
The module addresses the molecular basis of synaptogenesis and especially the influence of the extracellular matrix. Issues are inter alia the primary culture of neurons from different brain regions and of glial cells and the culture of defined glial cell lines. The analysis is based on immunocytology and the use of immunofluorescence techniques, biochemical studies and the characterization of expressed genes, Western blot, immunoprecipitation and the biochemical and molecular characterization of the extracellular matrix.

Proofs of academic achievement: seminar, written protocol

ADVANCED TUTORIAL (S-MODULE): GLYCOBIOLOGY OF NEURAL STEM CELLS (190 378)

Language: ger/eng

Department: Cell Morphology and Molecular Neurobiology
Degree programme: BSc / MSc
Module: n.s.
This module is taught entirely in English.
Course type: practical course
Credit Points: 15
Teacher/Lecturer: Prof. Dr. A. Faissner, E. Hennen
Requirements: GMP passed; basic module in cell or neurobiology, biochemistry or microbiology passed; lecture in cell or neurobiology attended

Course description:
The S-module provides the basis of protein biochemistry, molecular biological, and immunological methods in cell and developmental biology. The focus lies on the study of glycoproteins of the central nervous system. This projects deals with scientific questions in the current research process. Depending on the focus of the project some of the following methods are taught and used independently: immunocytochemistry, immunohistochemistry, RT-PCR, Western blot, in situ hybridization, cloning, plasmid purification, cell culture of primary tissue, culture of cell lines, production and purification of monoclonal antibodies.

Proofs of academic achievement: seminar, written protocol

ADVANCED TUTORIAL (S-MODULE): EXTRACELLULAR MATRIX AND DIFFERENTIATION OF RETINAL STEM CELLS (190 379)

Language: ger/eng

Department: Cell Morphology and Molecular Neurobiology
Degree programme: BSc / MSc
Module: n.s.
This module is taught entirely in English.
Course type: practical course
Credit Points: 15
Teacher/Lecturer: Prof. Dr. A. Faissner, M. Besser
Requirements: GMP passed; basic module in cell or neurobiology, biochemistry or microbiology passed; lecture in cell or neurobiology attended

Course description:
The module deals with cell and molecular biological studies on the development of the visual system of mammals. One focus is the role of Phosphotyrosinphosphatases in this context. It will cover following items: primary culture of retinal ganglion cells of the nervous system, culture defined glial cell lines, immunocytoLOGYof defined neural antigens in the visual system using
immunofluorescence techniques, fluorescence and confocal laser scanning microscopy, biochemical studies on tissues of the visual system and characterization of expressed genes, Western blot, immunoprecipitation, biochemical and molecular characterization of receptor phosphotyrosine phosphatases of the visual system, transfection and ectopic expression of PTPs, functional assays in co-cultures, functions and properties of retinal stem cells.

Proofs of academic achievement: seminar, written protocol

ADVANCED TUTORIAL (S-MODULE): NEURAL STEM CELLS IN THE SPINAL CORD (190 380)

Department: Cell Morphology and Molecular Neurobiology
Degree programme: BSc / MSc
Module: n.s.
This module is taught entirely in English.
Course type: practical course
Credit Points: 15
Teacher/Lecturer: Prof. Dr. A. Faissner, M. Karus
Requirements: GMP passed; basic module in cell or neurobiology, biochemistry or microbiology passed; lecture in cell or neurobiology attended

Room Day, Time Begin according to prior agreement

Course description:
The course offers an insight into cell biological approaches for the treatment of developmental issues, primarily to control the differentiation of neural stem cells. It includes biochemical studies on neural stem cells, characterization of expressed genes, the processing of the mechanisms of stem cell differentiation, approaches for the characterization of differential gene expression, control of neural stem cell differentiation by extracellular matrix, the control of stem cell proliferation and transgenic animal models. There techniques of immunohistochemistry, biochemistry, cell biology and molecular biology come to use. We use fluorescence microscopy, laser scanning microscopy, video microscopy and electron microscopy of biological specimens for the morphological characterization.

Proofs of academic achievement: seminar, written protocol

ADVANCED TUTORIAL (S-MODULE): BIOTECHNOLOGICAL METHODS IN MOLECULAR NEUROBIOLOGY (190 381)

Language: ger/eng
Department: Cell Morphology and Molecular Neurobiology
Degree programme: BSc / MSc
Module: n.s.
This module is taught entirely in English.
Course type: practical course
Credit Points: 15
Teacher/Lecturer: Prof. Dr. A. Faissner, Dr. U. Theocharidis, Dr. T. Sobik, S. van Leeuwen
Requirements: GMP passed; basic module in cell or neurobiology, biochemistry or microbiology passed; lecture in cell or neurobiology attended

Course description:
The module focuses on the molecular basis of developmental neurobiology. Using molecular biological and biotechnological methods, various aspects of cellular and molecular neurobiology can be elucidated. Objectives are the production and the molecular genetics of expression constructs and recombinant expression of proteins for use in cell culture and protein biochemical analysis. In addition, primary cells and cell lines are genetically manipulated and examined for the molecular and cellular biological effects. Using concrete examples bioinformatical techniques in the form of database analysis and sequence comparisons are carried out. The independent development and implementation of cloning strategies are learned and nurtured.
Methods: RT-PCR, cloning, plasmid purification, transfection, protein expression, Western blot, in situ hybridization, chromatin immunoprecipitation, dual-luciferase promoter binding studies, immuncyto-/histochemistry.

Proofs of academic achievement: seminar, written protocol

ADVANCED TUTORIAL (S-MODULE): TUMOR STEM CELLS AND BIOLOGY OF GLIAL TUMORS (190 382)

Language: ger/eng

Department: Cell Morphology and Molecular Neurobiology
Degree programme: BSc / MSc
Module: n.s.
This module is taught entirely in English.
Course type: practical course
Credit Points: 15
Teacher/Lecturer: Prof. Dr. A. Faissner, Dr. N. Brösicke
Requirements: GMP passed; basic module in cell or neurobiology, biochemistry or microbiology passed; lecture in cell or neurobiology attended
Course description:
The course focuses on the study of cellular and molecular aspects of tumor formation in the nervous system. It uses the culture of glial tumor cell lines and defined neural immunocytological antigens of the extracellular matrix and the cytoskeleton, immunofluorescence techniques and laser scanning microscopy, immunological studies of tumor cell lines and studies of ECM in primary tumors (in cooperation). An investigation of the neural regulation of extracellular matrix in tumor cells by cytokines by ELISA and Western blot is possible as well as profiling of receptor genes in tumor cell systems, analysis of integrins, PTPs and ECM glycoproteins, cell biological assays for proliferation, adhesion and migration of tumor cells, and finally the video microscopy of tumor cells of the nervous system.

Proofs of academic achievement: seminar, written protocol

ADVANCED TUTORIAL (S-MODULE): BIOLOGY OF MYELIN PRODUCING CELLS (190 386)

Language: ger/ eng

Department: Cell Morphology and Molecular Neurobiology
Degree programme: BSc / MSc
Module: n.s.
This module is taught entirely in English.
Course type: practical course
Credit Points: 15
Teacher/Lecturer: Prof. Dr. A. Faissner, S. van Leeuwen
Requirements: GMP passed; basic module in cell or neurobiology, biochemistry or microbiology passed; lecture in cell or neurobiology attended

Course description:
Oligodendrocytes in the central and Schwann cells in the peripheral nervous system stand in the focus of this course. With primary cell cultures and cell lines we analyse the molecular biological basis of the interaction between myelin producing glia cells and neurons. We use histological and immunocytochemical approaches for the analysis of these cells in the developing nervous system. Methods: culture of primary cells and cell lines, RT-PCR, Western blot, in situ hybridization, immuncyto-/histochemistry, fluorescence microscopy, laser scanning microscopy, video microscopy.

Proofs of academic achievement: seminar, written protocol
COLLOQUIUM: ACTUAL RESULTS IN CELL BIOLOGY AND MOLECULAR NEUROBIOLOGY (190606)

Language: English

**Department**: Cell Morphology and Molecular Neurobiology  
**Degree programme**: any  
**Module**: n.s.  
This module is taught entirely in English  
**Course type**: Seminar  
**Credit Points**: 1.0  
**Teacher/Lecturer**: Prof. Dr. A. Faissner, Prof. Dr. S. Wiese, Dr. U. Theocharidis, Dr. T. Sobik

**Requirements**: none

<table>
<thead>
<tr>
<th>Room</th>
<th>Day, Time</th>
<th>Begin</th>
</tr>
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<tbody>
<tr>
<td>ND 05 / 392</td>
<td>Mon, 9:15 - 10:30</td>
<td>continually</td>
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</table>

**Course description**:

Scientists from the department present actual research results.

**Proofs of academic achievement**: oral presentation

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SEMINAR / LITERATURE CLUB: ACTUAL PUBLICATIONS IN MOLECULAR AND CELLULAR NEUROBIOLOGY (190552)

Language: English

**Department**: Cell Morphology and Molecular Neurobiology  
**Degree programme**: any  
**Module**: n.s.  
This module is taught entirely in English.  
**Course type**: seminar  
**Credit Points**: 1.0  
**Teacher/Lecturer**: Prof. Dr. A. Faissner, Dr. T. Sobik, Dr. U. Theocharidis

**Requirements**: none

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<thead>
<tr>
<th>Room</th>
<th>Day, Time</th>
<th>Begin</th>
</tr>
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<tbody>
<tr>
<td>NDEF 05/</td>
<td>Thursday, 16:45</td>
<td>continually</td>
</tr>
</tbody>
</table>

**Course description**:

Students and scientists from the department present actual publications in molecular and cellular neurobiology.

**Proofs of academic achievement**: oral presentation
MODERN METHODS IN LIFE SCIENCES: ANALYSES OF RECEPTOR PHOSPHOTYROSIN PHOSPHATASES IN THE VISUAL SYSTEM (190806)

Language: ger/eng

Department: Cell Morphology and Molecular Neurobiology
Degree programme: PhD
Module: n.s.
This module is taught entirely in English
Course type: introductory course
Credit Points: 1 / 1,5 / 2
Teacher/Lecturer: Prof. Dr. A. Faissner, J. Reinhard, M. Besser
Requirements: Master degree

Room
Day, Time
Begin
according to prior agreement

Course description:
Theoretical and practical information is given about the cell biological and molecular biological analysis of receptor tyrosin phosphatases. Depending on the agreements the course can be attended for 3 to 5 days.

Proofs of academic achievement: n.s.

MODERN METHODS IN LIFE SCIENCES: CULTURE AND ANALYSIS OF EMBRYONIC HIPPOCAMPAL NEURONS UNDER DEFINED CONDITIONS, OF RETINAL GANGLION CELLS AND OF NEUROSPHERES (190805)

Language: ger/eng

Department: Cell Morphology and Molecular Neurobiology
Degree programme: PhD
Module: n.s.
This module is taught entirely in English
Course type: introductory course
Credit Points: 1 / 1,5 / 2
Teacher/Lecturer: Prof. Dr. A. Faissner, M. Geissler
Requirements: Master degree

Room
Day, Time
Begin
according to prior agreement
Course description:

Theoretical and practical information is given about the cell biological and molecular biological analysis of receptor tyrosin phosphatases. Depending on the agreements the course can be attended for 3 to 5 days.

Proofs of academic achievement: n.s.

MODERN METHODS IN LIFE SCIENCES: VIDEO MICROSCOPY AND CONFOCAL LASER SCANNING MICROSCOPY (190807)

Language: ger/ eng

Department: Cell Morphology and Molecular Neurobiology
Degree programme: PhD
Module: n.s.
This module is taught entirely in English
Course type: introductory course
Credit Points: 1 / 1,5 / 2
Teacher/Lecturer: Prof. Dr. A. Faissner, Dr. A. Klausmeyer, Dr. U. Theocharidis, J. Reinhard
Requirements: Master degree

Room Day, Time Begin according to prior agreement

Course description:

Theoretical and practical information is given about different microscopy techniques. Depending on the agreements the course can be attended for 3 to 5 days.

Proofs of academic achievement: n.s.
ADVANCED FINITE ELEMENT METHODS

Language: English

Department: Computational Engineering
Degree programme: Master
Module: Advanced Finite Element Methods
This module is taught entirely in English.
Course type: Lecture 2h / Exercise 2h
Credit Points: 6
Teacher/Lecturer: Prof. Dr. tech. Günther Meschke and assistants
Requirements: Ideally a B.Sc. degree in an engineering sciences subject; basics in mathematics, mechanics and structural analysis, good knowledge in Finite Element Methods in Linear Structural Mechanics

Room | Day, Time | Begin
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IA 6/21 | Mon 08:30 – 11:45 | See blackboard notice at the respective department

Course description:

Based upon a brief summary of non-linear continuum mechanics the weak form of non-linear elastodynamics, its consistent linearization and its finite element discretization are discussed and, in a first step, specialized to one-dimensional spatial truss elements to understand the principles of the formulation of geometrically nonlinear finite elements. In addition, an overview on nonlinear constitutive models including elasto-plastic and damage models is given. The second part of the lecture is focussed on algorithms to solve the resulting non-linear equilibrium equations by load- and arc-length controlled Newton-type iteration schemes. Finally, the non-linear finite element method is used for the non-linear stability analysis of structures.

The lectures are supplemented by exercises to support the understanding of the underlying theory and to demonstrate the application of the non-linear finite element method for the solution of selected examples. Furthermore, practical applications of the non-linear finite element method are demonstrated by means of a commercial finite element programme.

Proofs of academic achievement: Written examination, student projects and presentations

This course is especially suitable for exchange students.
COMPUTATIONAL FLUID DYNAMICS

Language: English

Department: Computational Engineering
Degree programme: Master
Module: Computational Fluid Dynamics
This module is taught entirely in English.
Course type: Lecture / Exercise
Credit Points: 6
Teacher/Lecturer: Prof. Dr. Christiane Helzel, Dr. M. Lipinski, Prof. Dr. Rüdiger Verfürth

Requirements: Ideally a B.Sc. degree in an engineering sciences subject; basic knowledge on partial differential equations and their variational formulation, finite element methods, numerical methods for the solution of large linear and non-linear systems of equations

Room
IA 5/21 (Tue); IA 2/56 (Thu)

Day, Time
Tue and Thu 12:15 – 13:45

Begin
See blackboard notice at the respective department

Course description:

1st week: Modelization
velocity, Lagrangian / Eulerian representation; transport theorem, Cauchy theorem; conservation of mass, momentum and energy; compressible Navier-Stokes / Euler equations; nonstationary incompressible Navier-Stokes equations; stationary incompressible Navier-Stokes equations; Stokes equations; boundary conditions

2nd week: Notations and auxiliary results
differential operators; Sobolev spaces and their norms; properties of Sobolev spaces; finite element partitions and their properties; finite element spaces; nodal bases

3rd week: FE discretization of the Stokes equations. 1st attempt
Stokes equations; variational formulation in \{\text{div } u = 0\}; non-existence of low-order finite element spaces in \{\text{div } u = 0\}; remedies

4th to 5th week: Mixed finite element discretization of the Stokes equations
mixed variational formulation; general structure of finite element approximation; an example of an unstable low-order element; inf-sup condition; motivation via linear systems; catalogue of stable elements; error estimates; structure of discrete problem

5th week: Petrov-Galerkin stabilization
idea: consistent penalty term; general structure; catalogue of stabilizations; connection with bubble elements; structure of discrete problem; error estimates; choice of stabilization parameters

6th week: Non-conforming methods
idea; most important example; error estimates; local solenoidal bases

7th week: Streamline formulation
stream function; connection to bi-Laplacian; FE discretizations

8th week: Numerical solution of the discrete problems
general structure and difficulty; Uzawa algorithm; improved version of Uzawa algorithm; multigrid; conjugate gradient variants
10th week: Adaptivity
aim of a posteriori error estimation and adaptivity; residual estimator; local Stokes problems;
choice of refinement zones; refinement rules

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

12th week: Solution of the algebraic equations
Newton iteration and its relatives; path tracking; non-linear Galerkin methods; multigrid

13th week: Adaptivity
error estimators; type of estimates; implementation

14th week: Finite element discretization of the instationary incompressible Navier-Stokes
equations variational problem; time-discretization; space discretization; numerical solution;
projection schemes; characteristics; adaptivity

14th week: Space-time adaptivity
Overview; residual a posteriori error estimator; time adaptivity; space adaptivity

14th week: Discretization of compressible and inviscid problems
Systems in divergence form; finite volume schemes; construction of the partitions; relation to
finite element methods; construction of numerical fluxes.

Proofs of academic achievement: Written examination

This course is especially suitable for exchange students.

COMPUTATIONAL MODELLING OF SUBSURFACE TRANSPORT PROCESSES

Language: English

Department: Computational Engineering
Degree programme: Master
Module: Computational Modelling of Subsurface Transport Processes
This module is taught entirely in English.
Course type: n.s.
Credit Points: 5
Teacher/Lecturer: Prof. Dr.-Ing. C. Koenig

Requirements: Ideally a B.Sc. degree in an engineering sciences subject; Mathematics, Fluid
Mechanics (Bachelor), Numerical Methods in Engineering; FEM in Linear Structural Mechanics

Room
CAE Pool IA 6/56

Day, Time
Tue 14:15 – 15:45, Fri 14:00 – 14:45

Begin
See blackboard notice at the respective department

Course description:
Physical phenomena in porous and fractured media
- Confined and unconfined flow
- Variable saturated media
- Seepage flow
- Advection-dispersion model
- Linear adsorption
- Multiphase flow
- Density dependent flow
- Matrix diffusion in fractured media
- Energy transport
- Cubic law
- Reactive transport
- Heterogeneity
- Non Darcy flow

Numerical methods
- Particle trekking
- Random walk
- Finite element method
- Method of characteristics
- Last square method
- Preconditioned conjugate gradient solver
- Operator split technique
- Upwind methods
- Optimisation for inverse modelling
- Stochastic generation of fractures

Application
- Practical projects (project studies, optional: case-studies)

Proofs of academic achievement: Oral examination

This course is especially suitable for exchange students.

CONCRETE ENGINEERING AND DESIGN

Language: English

Department: Computational Engineering
Degree programme: Master
Module: Concrete Engineering and Design
This module is taught entirely in English
Course type: Lecture 2h / Exercise 2h
Credit Points: 6
Teacher/Lecturer: Prof. Dr.-Ing Mark and assistants

Requirements: Ideally a B.Sc. degree in an engineering sciences subject; basic knowledge in structural engineering, mechanics of beams, reinforced concrete design and material properties

<table>
<thead>
<tr>
<th>Room</th>
<th>Day, Time</th>
<th>Begin</th>
</tr>
</thead>
<tbody>
<tr>
<td>IA 4/56</td>
<td>Mon 11:30 – 13:00; Thu 08:30 – 10:00</td>
<td>See blackboard notice at the respective department</td>
</tr>
</tbody>
</table>
Course description:

The module includes the following topics:
• principles and safety concept of Eurocode 2
• material properties and modelling
• bending and shear design
• design principles using spreadsheet analyses and optimisation methods
• moment-curvature-relations
• numerical section modelling (fibre model)
• strut-and-tie-modelling
• redistribution of sectional forces
• principles of pre-stressing:
  • methods of pre-stress application
  • time-variant and time-invariant losses
• calculation of deviation forces
• application in FE-methods
• application of mathematical software in nonlinear calculations
• optional: case study according to WP15 or W13

Proofs of academic achievement: written examination

This course is especially suitable for exchange students.

CONTINUUM MECHANICS

Language: English

Department: Computational Engineering
Degree programme: Master
Module: Continuum Mechanics
This module is taught entirely in English.
Course type: Lecture / exercise
Credit Points: 6
Teacher/Lecturer: Prof. Dr. rer. nat. K. Hackl

Requirements: Ideally a B.Sc. degree in an engineering sciences subject

Room: IA 3/56 (Tue); IA 6/21 (Wed)
Day, Time: Tue 08:30 – 10:00; Wed 08:30 – 10:00
Begin: See blackboard notice at the respective department

Course description:

The course starts with an introduction to the advanced analytical techniques of linear elasticity theory, then moves on to the continuum-mechanical concepts of nonlinear elasticity and ends with the discussion of material instabilities and microstructures. Numerous examples and applications will be given.
• Advanced Linear Elasticity
• Beltrami equation
• Navier equation
• stress-functions
• scalar- and vector potentials
• Galerkin-vector
• Love-function
• solution of Papkovich - Neuber
• Nonlinear Deformation
• Strain tensor
• Polar descomposition
• stress-tensors
• equilibrium
• strain-rates
• Nonlinear Elastic Materials
• Covariance and isotropy
• Hyperelastic materials
• constrained materials
• Hypoelastic materials
• objective rates
• material stability
• microstructures

Proofs of academic achievement: Written examination

This course is especially suitable for exchange students.

DYNAMICS AND ADAPTRONICS

Language: English

Department: Computational Engineering
Degree programme: Master
Module: Dynamics and Adaptronics
This module is taught entirely in English
Course type: Lecture 2h / Exercise 2h
Credit Points: 6
Teacher/Lecturer: Prof. Dr.-Ing Nestorovic / Appl. Prof. Dr. rer.nat. Le

Requirements: Ideally a B.Sc. degree in an engineering sciences subject; basic knowledge in structural mechanics, control theory and active mechanical structures

Room
CAE Pool IA 3/152

Day, Time
Wed 10:15 – 11:45; Fri 12:00 – 13:45

Begin
See blackboard notice at the respective department

Course description:

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

Further, an overall insight of the modelling and control of active structures is given within the
course. The terms and definitions as well as potential fields of application are introduced. For the
purpose of the controller design for active structural control, the basics of the control theory are
introduced: development of linear time invariant models, representation of linear differential
equations systems in the state-space form, controllability, observability and stability conditions of
control systems. The parallel description of the modelling methods in structural mechanics
enables the students to understand the application of control approaches. Finite element
modelling is an important prerequisite in structural control. Basics of the numerical model
development are introduced. Control methods include time-continuous as well as discrete-time
controllers in the state space for multiple-input multiple-output systems, as well as methods of the
classical control theory for single-input single output systems. Differences and analogies between
continuous and discrete time control systems are specified and pointed out on the basis of a pole
placement method. Closed-loop controller design for active structures is explained. Different
application examples and problem solutions show the feasibility and importance of the control
methods for structural development. The term, design and implementation of observers in the
controller design are introduced in terms of the practical aspects of structural control.

Proofs of academic achievement: written examination

This course is especially suitable for exchange students.

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**FINITE ELEMENT METHOD FOR NONLINEAR ANALYSIS OF INELASTIC MATERIALS AND STRUCTURES**

**Language:** English

**Department:** Computational Engineering

**Degree programme:** Master

**Module:** Finite Element Method for Nonlinear Analysis of Inelastic Materials and Structures

This module is taught entirely in English.

**Course type:** Lecture / Exercise

**Credit Points:** 3

**Teacher/Lecturer:** Prof. Dr. tech. Meschke

**Requirements:** Ideally a B.Sc. degree in an engineering sciences subject; basic knowledge of
tensor analysis, continuum mechanics and linear Finite Element Methods is required,
participation in the lecture ,,Advanced Finite Element Methods” (CE-WP04) is strongly
recommended

**Room**

IA 6/21

**Day, Time**

Mon 12:30 – 14:30

**Begin**

See blackboard notice at the respective department
Course description:

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

Proofs of academic achievement: Project work and final student presentation

This course is especially suitable for exchange students.

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FINITE ELEMENT TECHNOLOGY

Language: English

Department: Computational Engineering
Degree programme: Master
Module: Finite Element Technology
This module is taught entirely in English.
Course type: Lecture / Exercise
Credit Points: 3
Teacher/Lecturer: Dr.-Ing. S. Ilic

Requirements: Ideally a B.Sc. degree in an engineering sciences subject; basic knowledge of tensor analysis, continuum mechanics and Linear Finite Element Methods

Room
IA 3/56
Day, Time
Thu 10:15 – 11:45
Begin
See blackboard notice at the respective department

Course description:

The design of effective, enhanced finite element formulations avoiding locking effects is the goal of this course. For that purpose, the error estimation typical for this numerical procedure is elaborated first. In addition to a purely mathematical definition, an engineering interpretation of locking effects is discussed by means of illustrative examples. Subsequently, different state-of-the-art approaches eliminating the aforementioned effect are discussed in detail. These include:

• Reduced integration.
• Mixed finite element formulations.
• Enhanced Assumed Strain (EAS) concept.
• The examples consider the theory of small as well of finite deformations

Proofs of academic achievement: Written examination

This course is especially suitable for exchange students.
FLUID DYNAMICS

Language: English

Department: Computational Engineering
Degree programme: Master
Module: Fluid Dynamics
This module is taught entirely in English.
Course type: Lecture / Exercise
Credit Points: 3
Teacher/Lecturer: Prof. Dr.-Ing. R. Hoeffer and assistants

Requirements: Ideally a B.Sc. degree in an engineering sciences subject; Fluid Mechanics (B. Sc. Level)

Room
IA 4/56
Day, Time
Tue 10:15 : 11:45
Begin
See blackboard notice at the respective department

Course description:
The technical basics of dynamic fluid flows are introduced, studied and recapitulated as well as related problems which are relevant for practical applications and solution procedures with an emphasis put on computational aspects. The lectures and exercises contain the following topics:
• short review of hydrostatics and dynamics of incompressible flows involving friction (conservation of mass, energy and momentum, Navier-Stokes equations)
• potential flow
• isotropic turbulence and turbulence in a boundary layer flow
• flow over streamlined and bluff bodies
The students are guided in the exercises to working out assessment and solution strategies for related, typical technical problems in fluid dynamics.

Proofs of academic achievement: Written Examination

This course is especially suitable for exchange students.

NUMERICAL METHODS AND STOCHASTICS

Language: English

Department: Computational Engineering
Degree programme: Master
Module: Numerical Methods and Stochastics
This module is taught entirely in English.
Course type: Lecture / Exercise
Credit Points: 6
Teacher/Lecturer: Prof. Dr. H. Dehling, Prof. Dr. R. Verfürth
**Requirements:** Ideally a B.Sc. degree in an engineering sciences subject; basic knowledge of partial differential equations, numerical methods and stochastics

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<th>Room</th>
<th>Day, Time</th>
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</tr>
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<tbody>
<tr>
<td>NA 6/99 (Mon); IA 2/56 (Wed)</td>
<td>Mon 15:15 – 16:45; Wed 12:30 – 14:00</td>
<td>See blackboard notice at the respective department</td>
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**Course description:**

Numerical Methods:
- Boundary value problems for ordinary differential equations (shooting, difference and finite element methods)
- Finite element methods (short retroperspective preparing subsequent material)
- Efficient solvers (preconditioned conjugate gradient and multigrid algorithms)
- Finite volume methods (systems in divergence form, discretization, relation to finite element methods)
- Nonlinear optimization (gradient-type methods, derivative-free methods, simulated annealing)

Stochastics:
- Fundamental concepts of probability and statistics: (multivariate) densities, extreme value distributions, descriptive statistics, parameter estimation and testing, confidence intervals, goodness of fit tests
- Time series analysis: trend and seasonality, ARMA models, spectral density, parameter estimation, prediction
- Multivariate statistics: correlation, principal component analysis, factor analysis
- Linear models: multiple linear regression, F-test for linear hypotheses, Analysis of Variance

**Proofs of academic achievement:** Written Examination

This course is especially suitable for exchange students.
DEVELOPMENT ECONOMICS

Language: English

Department: Institute of Development Research and Development Policy
Degree programme: PhD
Module: n.s.
Course type: Lecture & Seminar
Credit Points: 4
Teacher/Lecturer: Prof. Dr. Wilhelm Löwenstein
Requirements: Admission to doctoral studies

Room Day, Time Begin

for further information please contact Dr. Katja Bender (Katja.Bender@rub.de)

Course description:
Participants will become familiar with up-to-date modelling approaches from the field of Development Economics, both from a theoretical and empirical perspective.

Proofs of academic achievement: Paper (70%) & oral presentation & discussion (30%)

ENVIRONMENTAL AND RESOURCE ECONOMICS

Language: English

Department: Institute of Development Research and Development Policy
Degree programme: PhD
Module: n.s.
Course type: Lecture & Seminar
Credit Points: 4
Teacher/Lecturer: Prof. Dr. Helmut Karl
Requirements: Admission to doctoral studies
Course description:
The course is aimed at familiarizing participants with basic models of Environmental and Resource Economics:
- Approaches of welfare economics and institutional economics to determine rational use of the absorption capacity of the environment
- Market failure, political failure and instruments of environmental policy
- Optimal use of resources

Proofs of academic achievement: Oral presentation

ECONOMIC REFORM, INCOME AND POVERTY

Language: English

Department: Institute of Development Research and Development Policy
Degree programme: PhD
Module: n.s.
Course type: Lecture & Seminar
Credit Points: 4
Teacher/Lecturer: Prof. Dr. Dieter Bender

Course description:
Based on approaches of growth theory participants will be able to analyse impacts of domestic and international reforms on growth and poverty. They will get familiar with the concepts of the “Washington-Consensus” and its critics and will discuss case studies of successful as well as failed reform policies.

Proofs of academic achievement: Paper & oral presentation

EMPIRICAL METHODS AND STATISTICAL ANALYSIS I

Language: English

Department: Institute of Development Research and Development Policy
Degree programme: PhD
Module: n.s.
Course type: Lecture & Seminar
Credit Points: 4
Teacher/Lecturer: Prof. Dr. Werner Voss
Requirements: Admission to Doctoral Studies

Room
Day, Time
Begin

for further information please contact Dr. Katja Bender (Katja.Bender@rub.de)

Course description:
Participants will get familiar with major methods of empirical research and advanced methods of statistical analyses. They will work with the statistical package SPSS to analyse data sets.

Proofs of academic achievement: Paper & oral presentation

RESEARCH METHODS

Language: English

Department: Institute of Development Research and Development Policy
Degree programme: PhD
Module: n.s.
Course type: Seminar
Credit Points: 4
Teacher/Lecturer: Dr. Katja Bender
Requirements: Admission to Doctoral Studies

Room
Day, Time
Begin

for further information please contact Dr. Katja Bender (Katja.Bender@rub.de)

Course description:
Institute of Development Research and Development Policy

Proofs of academic achievement: Oral presentation
ACADEMIC PAPER WRITING II

Language: English

Department: Institute of Development Research and Development Policy
Degree programme: PhD
Module: n.s.
Course type: Seminar
Credit Points: 8 (3 semester course)
Teacher/Lecturer: Dr. Katja Bender

Requirements: Admission to Doctoral Studies and successful completion of Academic Paper Writing I

Room
Day, Time
Begin
for further information please contact Dr. Katja Bender (Katja.Bender@rub.de)

Course description:
Participants will become familiar with the requirements of writing an academic paper. Supported by teaching modules participants have to individually prepare an academic paper.

Proofs of academic achievement: Oral presentation and paper
FACULTY OF ECONOMICS

http://www.wiwi.ruhr-uni-bochum.de

Contact:
Name: Michele Lorraine de Groot
Room: GC 3/156
Tel: 0234/32-22687
Email: Michele.deGroot@rub.de
Consultation hours: n.s.

ALLOCATION

Language: English

Department: Chair for Applied Microeconomics
Degree programme: Bachelor of Management and Economics
Module: n.s.
This module is taught entirely in English
Course type: Lecture (2h) plus tutorial (2h)
Credit Points: 10 ECTS
Teacher/Lecturer: Prof. Dr. Robledo

Requirements: Good knowledge of basic microeconomic theory, good command of English.

Room   Day, Time   Begin
HZO 70  Thursday 16.00-18.00  
        Friday 12.00-14.00  

Course description:
The course gives an overview of the expenditure side of public economics at a final year undergraduate level. Proposed topics:
Pareto criterion and welfare theorems
• Public goods (optimal provision, revelation mechanisms)
• Private provision of public goods
• Public provision of private goods
• Club goods and local public goods
• Externalities, Pigouvian taxation and the Coase theorem
• Common property goods
• Imperfect competition, monopoly, oligopoly
• Voting (impossibility theorem, voting rules)
• Rent seeking (social cost, lobbying)
The whole course will be in English and no knowledge of German is necessary to attend this course. The exam can be written in English or German.

Proofs of academic achievement: Written examination
APPLIED COMPETITION POLICY

Department: Chair of Competition Policy
Degree programme: Bachelor
Module: Competition Policy
This module is taught entirely in English
Course type: Lecture
Credit Points: 10 (Module)
Teacher/Lecturer: Professor Haisken-DeNew

Requirements: Knowledge of microeconomics is required

Room | Day, Time | Begin
--- | --- | ---
HZO 100 | Tuesday 10 – 12 | 05/04/2011

Course description:

Different aspects of competition theory and policy will be taught using empirical studies. Focus lies on empirical economic papers and case studies to gain knowledge and in-sights to practical work and empirics of antitrust and competition policy

Proofs of academic achievement: Written Exam

COMPETITION POLICY

Department: Chair of Competition Policy
Degree programme: Bachelor of Management and Economics
Module: n.s.
This module is taught entirely in English
Course type: Lecture
Credit Points: 10 (ECTS)
Teacher/Lecturer: Professor Haisken-DeNew

Requirements: Knowledge of microeconomics is required

Room | Day, Time | Begin
--- | --- | ---
HZO 100 | Wednesday 08.00-10.00 | 
HZO 90 | Thursday 14.00-16.00 |

Course description:

The module „Competition Policy“ gives basic insights into the field of antitrust and competition policy in a global context. Using principles from industrial economics the economic impacts of cartels, joint-ventures, mergers, vertical contracts, price discrimination and so on are analyzed. We
focus on actual research and real world examples. Therefore the literature is partly based on primary literature like empirical papers and case studies.

Proofs of academic achievement: Written examination

COMPETITION POLICY

Language: English

Department: Chair of Competition Theory and Policy
Degree programme: Bachelor
Module: Competition Policy
This module is taught entirely in English
Course type: Lecture
Credit Points: 10 (Module)
Teacher/Lecturer: Professor Haisken-DeNew

Requirements: Knowledge of microeconomics is required

Room: HZO 60
Day, Time: Wednesday 10 - 12
Begin: 06/04/2011

Course description:
Aim of this course is the understanding of basic economic principles of antitrust- and competition policy, under both a theoretical and a practical view.

Proofs of academic achievement: Written Exam

MARKETING MANAGEMENT

Language: English

Department: Chair of the Marketing Department
Degree programme: Bachelor of Management and Economics
Module: n.s.
This module is taught entirely in English
Course type: Lecture (3h) and tutorial (3h)
Credit Points: 10 ECTS
Teacher/Lecturer: Prof. Dr. Wieseke, Jun.-Prof. Dr. Kraus

Requirements: Knowledge of the modules „Statistik I“, „Statistik II“ and „Einführung in die Betriebswirtschaftslehre“
MARKETING MANAGEMENT

Department: Marketing Department
Degree programme: Bachelor
Module: Marketing Management
This module is taught entirely in English
Course type: Lecture and Exercise
Credit Points: 10 ECTS
Teacher/Lecturer: Prof. Dr. David Woisetschläger
Requirements: none

Course description:
The goals of international companies are often not only value oriented, but also market and customer oriented. To achieve these goals is the purpose of marketing. The decisions which lead to a market orientated management will be discussed. As lots of analyses in companies are usually conducted with statistical methods nowadays, these will also be content of the course.

Proofs of academic achievement: written examination

BEHAVIORAL MACROECONOMICS

Language: English

Department: Chair for Macroeconomics
Degree programme: Master of Management and Economics / Master of Economics
Module: n.s.
This module is taught entirely in English
Course type: Lecture (2h)
Credit Points: 5 ECTS
Teacher/Lecturer: Prof. Dr. Roos
**Requirements:** good command of English, successful conclusion of the module „Advanced Macroeconomics“

**Room**  
GC 02/120  
**Day, Time**  
Friday 08.30-12.00  
**Begin**  
15.04.-27.05.2011

**Course description:**

Modern mainstream macroeconomics has solid microfoundations. In order to derive macroeconomic outcomes from individual behaviour, researchers often make restrictive simplifying assumptions such as homogeneity of agents, strict rationality, optimal learning, and irrelevance of affects. The resulting macroeconomic models may have little empirical relevance and fail to explain important phenomena such as persistent poverty and major economic crises. We examine the effects of such unrealistic assumptions and discuss problems of mainstream macroeconomic models. We also investigate how macroeconomics can benefit from other disciplines such as sociology and psychology. You also learn how methods from behavioral economics such as experiments or simulations can be applied to macroeconomic topics.

**Proofs of academic achievement:** Written examination

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**DEFENCE ECONOMICS**

**Language:** English

**Department:** Chair for Microeconomics

**Degree programme:** Master of Management and Economics / Master of Economics

**Module:** n.s.  
This module is taught entirely in English  
**Course type:** Lecture (2h)  
**Credit Points:** 5 ECTS  
**Teacher/Lecturer:** Prof. Dr. Schimmelpfennig

**Requirements:** Knowledge of the module Advanced Microeconomics

**Room**  
HGC 50  
**Day, Time**  
Monday 14.00-16.00  
**Begin**  
n. s.

**Course description:**

- Demand for Military Expenditure  
- Deterrence  
- War (Games)  
- Military Pay  
- Independent versus Joint Forces  
- Military Procurement I: Quantity versus Quality  
- Industrial Organization of Defence Industries  
- Military Procurement II: Specifications and Prototypes  
- Competitiveness of Aerospace Industries
International Seminars and Lectures

- Naval Shipbuilding and Warfare
- Arms Trade
- Insurrections and Revolutions
- Guerrilla Warfare
- International Terrorism

Proofs of academic achievement: Written examination

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**ECONOMIC REFORMS, INCOME AND POVERTY**

Language: English

Department: Economics
Degree programme: MSc in Economics and MSc in Management & Economics
Module: Economic reforms, income and poverty
This module is taught entirely in English
Course type: Seminar
Credit Points: 5
Teacher/Lecturer: Prof. Busse

Requirements: prior knowledge in development economics

<table>
<thead>
<tr>
<th>Room</th>
<th>Day, Time</th>
<th>Begin</th>
</tr>
</thead>
<tbody>
<tr>
<td>GBCF 04/411</td>
<td>Tuesday, 2-4 pm</td>
<td>05.04.2011</td>
</tr>
</tbody>
</table>

Course description:

By enrolling in this course, students can learn theoretical concepts underlying the impacts of economic reform. The course will focus on key elements of economic reform programs, for example, programs implemented in the context of PRS (Poverty Reduction Strategy) or trade reforms from a theoretical and empirical point of view. Also, students will hone their skills to assess problems of implementation and evaluate economic reform programs.

By the end of the course, students are able to discuss economic reform programs and their income and poverty effects by applying the acquired theoretical knowledge.

Proofs of academic achievement: seminar paper and presentation

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**INTERNATIONAL TRADE**

Language: English

Department: Economics
Degree programme: MSc in Economics and MSc in Management & Economics
Module: International trade
This module is taught entirely in English
Course type: Lecture and tutorial
Credit Points: 5
Teacher/Lecturer: Prof. Busse
Requirements: none

Room  | Day, Time  | Begin  
------|-----------|-------
HGC 50 | Monday, 4-6 pm | 04.04.2011

Course description:

This course provides an advanced study of international trade theory and policy. We will discuss aspects of international trade at a fairly abstract and rigorous level. The issues that will be addressed are, among others, the fundamental gains from trade, the implications of imperfect competition for trade patterns and welfare, how firms of different sizes and productivities engage in trade and investment, and justifications for policies that restrict trade. Also covered are real-world areas of international trade, including trade institutions as well as regional and bilateral trade agreements.

The course has three main goals:
1. To develop a solid grounding in the analytical work of modern trade theory
2. To master some tools for use in practical trade analysis
3. To provide a better understanding of the circumstances within which international trade policy is provided.

Proofs of academic achievement: exam

This course is especially suitable for exchange students.

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INTRODUCTION TO INTERNATIONAL TAXATION

Language: English

Department: Lehrstuhl für Betriebswirtschaftliche Steuerlehre
Degree programme: Master
Module: Introduction to International Taxation
This module is just partly taught in English
Course type: Lecture
Credit Points: 5
Teacher/Lecturer: Dr. Achim Roeder
Requirements: BSc-Modul „Unternehmensbesteuerung I“

Room  | Day, Time  | Begin  
------|-----------|-------
GC 03/42 | Thursday 08.00-10.00 | 07/04/2011

Course description:

The study module Introduction to International Taxation deals with tax aspects of cross-border activities of German resident taxpayers in foreign countries and non-resident taxpayers in Germany. In this course, attention is especially given to unilateral and bilateral regulations which
shall prevent double taxation and regulations which shall secure the national taxation right. Therefore emphasis is given to double taxation treaties and the German Foreign Tax Act (AStG). Based on this knowledge the influence of taxation on the structure of foreign investments (location, legal form, financing) is taken into consideration.

**Proofs of academic achievement:** written examination

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**INTRODUCTION TO INTERNATIONAL TAXATION**

*Language:* German

**Department:** Lehrstuhl für Betriebswirtschaftliche Steuerlehre  
**Degree programme:** Master  
**Module:** Introduction to International Taxation  
This module is just partly taught in English  
**Course type:** Tutorial  
**Credit Points:** 5  
**Teacher/Lecturer:** Dirk Langkau  
**Requirements:** BSc-Modul „Unternehmensbesteuerung I“

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<thead>
<tr>
<th>Room</th>
<th>Day, Time</th>
<th>Begin</th>
</tr>
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<tr>
<td>GC 02/120</td>
<td>Wednesday 8.00-10.00</td>
<td>13/04/2011</td>
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</table>

**Course description:**

The tutorial serves the repetition of particular contents of the lecture in German language. The study module Introduction to International Taxation deals with tax aspects of cross-border activities of German resident taxpayers in foreign countries and non-resident taxpayers in Germany. In this course, attention is especially given to unilateral and bilateral regulations which shall prevent double taxation and regulations which shall secure the national taxation right. Therefore emphasis is given to double taxation treaties and the German Foreign Tax Act (AStG). Based on this knowledge the influence of taxation on the structure of foreign investments (location, legal form, financing) is taken into consideration.

**Proofs of academic achievement:** written examination

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**INNOVATIONSMANAGEMENT**

*Language:* English

**Department:** Junior-Professorship for Management and Innovation  
**Degree programme:** Master of Management and Economics / Master of Management  
**Module:** n.s.  
This module is taught entirely in English  
**Course type:** Lecture (2h) and tutorial (4h)
Credit Points: 10 ECTS
Teacher/Lecturer: Jun.-Prof. Dr. Salge
Requirements: Basic knowledge of statistics is assumed

Room  
Day, Time  
Begin
GC 03/42  
Tuesday 12.00-14.00  
n.s.
Tuesday 16.00-18.00

Course description:
This event is an introduction to Innovation Management. It involves looking at the entire process from the inception of an idea to its successful implementation. Innovation with regard to products, services and processes are distinguished here, as are open and closed innovation procedures. This will take place against the background of an in-depth discussion of the significance of national, regional and sectoral innovation systems. The event will enable students to acquire important theoretical foundations and introduces tools for successful innovation management. Moreover, students will gain first insights into empirical innovation research and discuss concrete problems that stem from the organizational practice of innovation management.

Proofs of academic achievement: Written exam (50%), case study (50%)

LABOR ECONOMICS

Language: English

Department: Chair for Empirical Economics
Degree programme: Master
Module: Labor Economics
This module is taught entirely in English
Course type: Lecture and Tutorial
Credit Points: 5
Teacher/Lecturer: Prof. Dr. Thomas K. Bauer
Requirements: Bachelor Degree in Economics. We recommend to have microeconomic basics and to participate in the module Applied Economics in advance.

Room  
Day, Time  
Begin
HBC 50 / HZO 60  
Wednesday 10.15-11.45 / 18:00-18:45  
13/04/2011

Course description:
The labor market affects the daily lives and the welfare of every individual directly. Hence, the analysis of labor markets is of importance and interest not only to economists but also to the population is 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 labor market. Institutions affect the labor market much more than any other market.
The aim of this module is to give an understanding of the distinctive features of labor markets and the way in which they operate. Among other things, we will analyze labor supply, labor demand, human capital, and the role of different labor market institutions and labor market policies for wages and employment. Throughout the module, we attempt to integrate theoretical issues and empirical evidence, and to address questions of policy. The latter will concentrate on European issues.

Proofs of academic achievement: written examination

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**RISK MANAGEMENT AND REGULATION**

Language: English

Department: Department of Economics

Degree programme: Master

Module: Banking and finance 3

This module is taught entirely in English

Course type: Lecture

Credit Points: 5

Teacher/Lecturer: Dr. André Uhde

Requirements: Previous knowledge in banking and finance

Room: GC03/46

Day, Time: Tuesday, 12.00-14.00

Begin: n.s.

Course description:

Selected topics in financial risk management; financial intermediation theories; banking regulation.

Proofs of academic achievement: written examination

---

**THEORY OF PRODUCTION**

Language: English

Department: Lehrstuhl für Produktionswirtschaft

Degree programme: Master of Management, Master of Economics, Master of Management and Economics

Module: Theory of Production

This module is taught entirely in English

Course type: Lecture

Credit Points: 5

Teacher/Lecturer: Prof. Dr. Marion Steven
**Requirements**: Bachelors Degree in Management and Economics

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<tr>
<th>Room</th>
<th>Day, Time</th>
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<tr>
<td>GC 4/58</td>
<td>Thursday 12.00 (first meeting)</td>
<td>07/04/2011</td>
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</table>

**Course description:**

The course will be taught as a block course, time and location will be discussed during the first meeting.

The theory of production deals from a theoretical point of view with fundamental relations of economic transformation processes and thus forms a basis for production decisions. The most important models of the theory of production will be presented with a focus on their relations and fundamental mechanisms. Main ideas are the dynamics of production, the integration of environmental aspects and the relations of the theory of production and production management.

A sound knowledge of mathematical methods is required.

**Proofs of academic achievement**: written examination

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**WELFARE ECONOMICS - LECTURE**

**Language**: English

<table>
<thead>
<tr>
<th>Department</th>
<th>Chair of Competition Policy</th>
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<tbody>
<tr>
<td><strong>Degree programme</strong></td>
<td>Master</td>
</tr>
<tr>
<td><strong>Module</strong></td>
<td>Welfare Economics</td>
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<tr>
<td>This module is taught entirely in English</td>
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<tr>
<td><strong>Course type</strong></td>
<td>Lecture</td>
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<tr>
<td><strong>Credit Points</strong></td>
<td>10 (Module)</td>
</tr>
<tr>
<td><strong>Teacher/Lecturer</strong></td>
<td>Professor Haisken-DeNew</td>
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<tr>
<td><strong>Requirements</strong></td>
<td>Knowledge of economic research methods</td>
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<tr>
<td>HGC 40</td>
<td>Thursday 10 - 12</td>
<td>06/04/2011</td>
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**Course description:**

Different aspects of welfare measurement, the theoretical foundations and empirical findings will be taught. The main topics are measuring poverty and the utility indicator life satisfaction. Lectures will mainly be based on recent empirical articles.

**Proofs of academic achievement**: Written exam (50%), case study (50%)
ANALYSIS AND INTERPRETATION - INVERSE PROBLEMS

Language: English

Department: Institut für Geologie, Mineralogie und Geophysik

Degree programme: Master

Module: n.s.

Course type: Lecture and exercises

Credit Points: 5

Teacher/Lecturer: Prof. Dr. Wolfgang Friederich

Requirements: Generally: BSc in Geosciences or a related discipline. Specifically: candidates are required to contact the lecturer (wolfgang.friederich@rub.de) prior to admission to this course.

Room            Day, Time          Begin
n.s.             n.s.              n.s.

Course description:

Students learn general techniques of deriving earth models from observed data by solving an optimization problem with emphasis on inverse problems with inconsistent, erroneous and incomplete data.

Proofs of academic achievement: Written examination and exercises

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EXPLORATION GEOPHYSICS II

Language: English

Department: Institut für Geologie, Mineralogie und Geophysik

Degree programme: Master

Module: n.s.

This module is taught entirely in English

Course type: n.s.

Credit Points: 5

Teacher/Lecturer: Prof. Dr. Jörg Renner
Requirements: none

Room
NA 04/591

Day, Time
Monday 9.00 - 9.45

Begin
04/04/11

Course description:

1) Introduction into origin of hydrocarbons; 2) Physical properties of hydrocarbons
3) Basics of poro-elasticity; 4) Hydraulic borehole testing (theory and practice)
5) Geothermal energy provision; 6) Particular seismic waves (guided waves, waves in fluid-saturated media)

aim: students are supposed to learn the basics of procedures often used in exploration beyond the seismic methods taught in “Exploration Geophysics I“; besides practical aspects the theoretical description (differential equations) and solving strategies are presented

Proofs of academic achievement: Written exam (+ weakly assignments)

GLOBAL TECTONICS

Language: English

Department: Institut für Geologie, Mineralogie und Geophysik

Degree programme: Master

Module: n.s.

Course type: Lecture

Credit Points: 3

Teacher/Lecturer: Prof. Dr. Bernhard Stöckhert

Requirements: Generally: BSc in Geosciences or a related discipline. Specifically: candidates are required to contact the lecturer (bernhard.stoeckhert@rub.de) prior to admission to this course.

Room
n.s.

Day, Time
n.s.

Begin
n.s.

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

LOW-TEMPERATURE THERMOCHRONOMETRY

Language: English
Department: Institut für Geologie, Mineralogie und Geophysik
Degree programme: Master
Module: n.s.
Course type: Lecture and exercise
Credit Points: 3
Teacher/Lecturer: Dr. Manfred Brix

Requirements: BSC in Geosciences or a related discipline


Course description:
The course provides an overview on dating techniques and their applications to the evolution of rocks between 300°C and ambient temperatures. Case studies cover the reconstruction of cooling, uplift, exhumation, and denudation of metamorphic or plutonic rocks (including hydrothermal ore deposits) as well as sedimentary basin subsidence, inversion, and fault movements.

Proofs of academic achievement: Written examination

MARINE MICROPALAEONTOLOGY 1

Language: English

Department: Institut für Geologie, Mineralogie und Geophysik
Degree programme: Master
Module: n.s.
Course type: Lecture and exercises; 3 hours /week
Credit Points: 4
Teacher/Lecturer: Prof. Dr. Joerg Mutterlose

Requirements: BSc in Geosciences or Biology. A pre-requisite for this course is that the students have successfully attended basic courses in palaeontology or biology, stratigraphy and sedimentology


Course description:
The course covers the principles of marine micropalaeontology, introducing the most important groups of microfossils: Dinoflagellates, calcispheres, spores, pollen, calcareous nanofossils, diatoms, silicoflagellates, foraminifera, radiolarians, ostracods and conodonts. Special emphasis is paid to the palaeoecologic and oceanographic interpretations based on these groups. A second topic is the stratigraphic application in particular to oil industry related activities (bore hole dating, interpretation of sedimentary sequences etc.).

Proofs of academic achievement: Written exam at the end of the term
MARINE MICROPALAEONTOLOGY 2

Language: English

Department: Institut für Geologie, Mineralogie und Geophysik
Degree programme: Master
Module: n.s.
Course type: Lecture and exercises; field course, 3 days
Credit Points: 4
Teacher/Lecturer: Prof. Dr. Joerg Mutterlose

Requirements: The students must have attended the course "Micropalaeontology 1" successfully.

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<tr>
<td>NA 04/597</td>
<td>Wednesday 10.15 - 11.45</td>
<td>06/04/11</td>
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</table>

Course description:

During the field course several siliciclastic sequences will be logged lithologically. Bed-by-bed samples will be taken in the field for a future analyses by the participants. After preparation for micropalaeontological studies (washing) the samples will be analysed by the students with respect for their faunal contents. The palaeoecologic and stratigraphic implications of these observations will be discussed.

Proofs of academic achievement: Oral presentation and written report at the end of the term.

ORGANIC HYDROCHEMISTRY

Language: English

Department: Institut für Geologie, Mineralogie und Geophysik
Degree programme: Master
Module: n.s.
Course type: Lecture and exercise
Credit Points: 4
Teacher/Lecturer: Prof. Dr. Frank Wisotzky

Requirements: Knowledge about hydrogeology

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<th>Room</th>
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<tr>
<td>NA 1/173</td>
<td>Monday 10.15 – 11.45</td>
<td>04/04/11</td>
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</table>

Course description:

Behaviour of organic substances in aquifers, remediation

Proofs of academic achievement: Examination and handling of exercises
STRATIGRAPHY

Language: English

Department: Institut für Geologie, Mineralogie und Geophysik

Degree programme: Master

Module: n.s.

Course type: Field course; 3 days

Credit Points: 2

Teacher/Lecturer: Prof. Dr. Joerg Muttelose

Requirements: The students must have attended the course "Micropalaeontology 1" successfully.

Course description:

During the three day field course various outcrops exposing sediments of Triassic, Jurassic and Cretaceous age will be visited. And discussed with respect to their stratigraphy, lithology and palaeontology. Several siliciclastic sequences will be logged lithologically by each participant. Bed-by-bed samples will be taken in the field for a future analysis by the students.

Proofs of academic achievement: Written report at the end of the term.

THEORETICAL GEOPHYSICS - SEISMIC WAVES

Language: English

Department: Institut für Geologie, Mineralogie und Geophysik

Degree programme: Master

Module: n.s.

Course type: Lecture and exercise

Credit Points: 5

Teacher/Lecturer: Prof. Dr. Wolfgang Friederich

Requirements: Generally: BSc in Geosciences or a related discipline. Specifically: candidates are required to contact the lecturer (wolfgang.friederich@rub.de) prior to admission to this course.

Course description:

The course gives an introduction to the theory of seismic waves and the description of seismic sources. Starting from the elastodynamic wave equation the course treats wave propagation in homogeneous acoustic and elastic media. Highlight is the propagation of seismic waves in a layered Earth model.

Proofs of academic achievement: Written examination and exercises.
MICROSTRUCTURE AND MECHANICAL PROPERTIES

Language: English

Department: Micromechanical and Macroscopic Modelling; Scale Bridging Thermodynamics and Kinetic Simulation
Degree programme: Master
Module: 3b
Course type: Lecture with exercises
Credit Points: 4
Teacher/Lecturer: 6
Requirements: Master

Room: Prof. Dr. Gregor Schöner
Day, Time: Thursday, t. b. a.
Begin: 14/04/11

Course description:

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

Proofs of academic achievement: Seminar

SURFACES AND INTERFACES

Language: English

Department: Micromechanical Modelling of Macroscopic Material Behaviour, Atomistic Modelling and Simulation, ICAMS
Degree programme: Master
Module: 6 - MS1
Course type: Lecture plus exercises
Credit Points: 6
Teacher/Lecturer: 6
Requirements: Master

Room Day, Time Begin
Prof. Dr. Gregor Schöner Thursday, t. b. a. 07/04/10

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

Proofs of academic achievement: Seminar

---

WRITING A FINITE ELEMENT PROGRAM

Language: English

Department: Micromechanical Modelling of Macroscopic Material Behaviour, ICAMS
Degree programme: Master
Module: Writing a finite element program
Course type: Lecture, including computer exercises
Credit Points: 6
Teacher/Lecturer: 6
Requirements: n.s.

Room Day, Time Begin
t.b.a. t.b.a. t.b.a.

Course description:
This course will equip participants with a fundamental understanding of FEM-Programs by guiding students to independently write their own FEM software for continuum problems. The course will cover all the necessary steps to write this software: input of mesh, evaluation and output. The abstract concept of FEM is thereby first-hand used to solve an engineering problem.

Proofs of academic achievement: written examination
MICROSTRUCTURE AND MECHANICAL PROPERTIES

**Language:** English

**Department:** Micromechanical and Macroscopic Modelling; Scale Bridging Thermodynamics and Kinetic Simulation

**Degree programme:** Master

**Module:** 3b

**Course type:** Lecture with exercises

**Credit Points:** 4

**Teacher/Lecturer:** 6

**Requirements:** Master

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<th>Room</th>
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<tr>
<td>Prof. Dr. Gregor Schöner</td>
<td>Thursday, t. b. a.</td>
<td>14/04/11</td>
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</table>

**Course description:**

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

**Proofs of academic achievement:** Seminar
COMMON LAW FOR CIVIL LAWYERS

Language: English

Department: Dean of the Faculty of Law
Degree programme: Staatsexamen, Master LLM
Course type: Lecture/workshop
Credit Points: 3
Teacher/Lecturer: Katrin Giesen
Requirements: English proficiency

Room
GC8/38

Day, Time
13.06.2011 to 17.08.2011,
10:00 to 16:00,
20.06.2011 10:00 to 12:00

Begin
13.06.2011

Course description:

It is the main objective of the course to provide students with an overview of those areas of common law which they are most likely to encounter in private practice. They will be familiarised with the terminology and doctrines of tort law and contract law, and encouraged to apply knowledge to factual situations.

Proofs of academic achievement: written exam on 16.06.2011, short problem question assignment

This course is especially suitable for exchange students.

PLAIN ENGLISH FOR LAWYERS

Language: English

Department: Dean of the Faculty of Law
Degree programme: Staatsexamen, Master LLM
Course type: Lecture/workshop
Credit Points: 3
Teacher/Lecturer: Katrin Giesen
Requirements: English proficiency

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<th>Room</th>
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<tr>
<td>GC 8/38</td>
<td>Thursday, 12.00 - 14.00</td>
<td>14.04.2011</td>
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<tr>
<th>Room</th>
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<tr>
<td>GC 8/38(15.04 &amp; 20.05)</td>
<td>Fridays, 12.00 - 14.00</td>
<td>15.04.2011</td>
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<td>GC7/31</td>
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<tr>
<td>GC 8/38</td>
<td>Thursdays, 10.00 - 12.00</td>
<td>14.04.2011</td>
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Course description:

It is the main objective of the course 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 practicing 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 especially suitable for exchange students.
NUMERICAL METHODS AND STOCHASTICS

Language: English

Department: Mathematics
Degree programme: Master Course Computational Engineering
Module: Numerical Methods and Stochastics
This module is taught entirely in English
Course type: Lecture series
Credit Points: 6
Teacher/Lecturer: Proff. H. Dehling and R. Verfürth
Requirements: Knowledge of Analysis, Numerics and Stochastics on the level of a bachelor in engineering science

Room
Day, Time
Begin

- t. b. a.
- Mon. 15:15-16:45
- Wed. 12:30-14:00
- April, 4th

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

Proofs of academic achievement: 2 hours written exam
MEDICAL FACULTY

INST. PHYSIOLOGY

http://www.ruhr-uni-bochum.de/lmr/

Contact:
Name: Prof. Dr. Denise Manahan-Vaughan
Room: MA 4/149
Tel: 0234/32-22042
Email: lmr@rub.de
Consultation hours: on demand

STRUCTURE, FUNCTION & PLASTICITY OF THE CENTRAL NERVOUS SYSTEM

Language: English

Department: Neurophysiology
Degree programme: Medical Doctor (MD) / PhD Neuroscience / ext. Course Neurophysiology for Students of Physics
Module: n.s.
This module is taught entirely in English
Course type: Seminar / Journal Club
Credit Points: 2
Teacher/Lecturer: Dr. Hardy Hagena, Dr Michael Fährmann, Dr Verena Aliane, Dr. Gleb Barmashenko, Prof. Klaus Funke
Requirements: Advanced registration for the course (deadline March 23rd 2011); Regular and active participation throughout the semester; Preparation for the course (reading, in advance, of the journal to be presented by the other course participants, preparation of questions); Presentation by the participant of a journal within the topic of the course.

Room          Day, Time       Begin
FNO 01/117    Wednesday 16:30  06/04/2011

Course description:
Analytical discussion of recent publications in the field related to the course title. Active presentation of a journal (at least one journal per participant per semester), discussion of research approaches and the state-of-the-art in the area of neuroscience.

Proofs of academic achievement: Certificate for MD, PhD students / Oral Exam and certificate for Students of Physics

This course is credited for “Optionalbereich”. 
DEPARTMENT OF NEUROLOGY, ST. JOSEF HOSPITAL:

http://neurologie.klinikum-bochum.de

Contact:
Prof. Dr. Ralf Gold, PD Dr. Andrew Chan
office
Tel: 0234 / 509-2411
Email: peter.h.kraus@ruhr-uni-bochum.de
Consultation hours: date by arrangement

SEMINAR: NEUROIMMUNOLOGY

Teacher/Lecturer: Prof. Dr. Ralf Gold, PD Dr. Andrew Chan, plus invited lecturers

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<thead>
<tr>
<th>Room</th>
<th>Day, Time</th>
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<tr>
<td>Lecture room 6,</td>
<td>Thursday, 17:00-18:00</td>
<td>April, 2011</td>
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<tr>
<td>“Hörsaalzentrum”</td>
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Course description:
The seminar will cover topics in the field of neuroimmunology including presentation of current clinical and laboratory research as well as therapy updates.

(details will be announced: http://neurologie.klinikum-bochum.de/fortbildung.shtml)

LECTURE: NEURODEGENERATION

Teacher/Lecturer: PD Dr. Peter H. Kraus, PD Dr. Dirk Woitalla, PD Dr. Carsten Saft, PD Dr. Siefried Muhlack

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<th>Room</th>
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<tr>
<td>Lecture room 2,</td>
<td>to be announced</td>
<td>April, 2011</td>
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<tr>
<td>“Hörsaalzentrum”</td>
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Course description:
The lecture will introduce into principles of neurodegeneration and present clinical pictures induced by neurodegenerative processes. Clinical main topics will be Parkinson’s disease, Huntingtons Disease and Dementia.

(details will be announced: http://neurologie.klinikum-bochum.de/fortbildung.shtml)
INSTITUT OF ANATOMIE

http://www.ruhr-uni-bochum.de/anat1

Contact:
Name: Prof. B. Brand-Saber
Room: MA Süd 05/158
Tel: 0234/32-25213
Email: Beate.Brand-Saberi@rub.de
Consultation hours: after prior consultation

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<tr>
<td>MA 5/62</td>
<td>Tuesday, 09:15-11:15</td>
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**Language:** English

**Department:** Anatomy and Molecular Embryology

**Degree programme:** n. s.

**Module:** Developmental Stem Cell Biology

**Course type:** Lecture

**Credit Points:** up to 5

**Teacher/Lecturer:** Brand-Saberi, Hofmann, Mannherz

**Requirements:** none

**Course description:**

The lecture series focuses on aspects of mammalian reproductive biology and embryology and gives an overview of stem cell principles nomenclature, systematics and current usage in medical contests.

**Proofs of academic achievement:** multiple choice

This course is credited for “Optionalbereich”
INSTITUTE FOR NEUROINFORMATICS

Contact:
Name: Kathleen Schmidt
Room: NB 3/32
Tel: 0234/32-28998
Email: Kathleen.Schmidt@ini.rub.de
Consultation hours: 8:00 - 13:00 h

MATHEMATICS FOR MODELING AND DATA ANALYSIS

Language: English

Degree programme: Bachelor
Module: Mathematics for modeling and data analysis
This module is taught entirely in English
Course type: Lecture and Tutorial
Credit Points: 2 (Lecture), 4 (Tutorial)
Teacher/Lecturer: Prof. Dr. Laurenz Wiskott
Requirements: basic knowledge of linear algebra and calculus

Course description:
This course covers mathematical methods that are relevant for modeling and data analysis. Particular emphasis will be put on an intuitive understanding as is required for a creative command of mathematics. The following topics will be covered: functions, qualitative analysis of nonlinear differential equations, Bayes theory, multiple integrals.

Proofs of academic achievement: written examination

AUTONOMOUS ROBOTICS: ACTION, PERCEPTION AND COGNITION

Language: English

Degree programme: Master
Module: Autonomous robotics: action, perception and cognition
This module is taught entirely in English
Course type: Lecture + Tutorial
Credit Points: 5
Teacher/Lecturer: Prof. Dr. Gregor Schöner
**Requirements:** none

**Room | Day, Time | Begin**
--- | --- | ---
NB 3/57 | Thursday, 14.15-16.00 | 07.04.2011 (Lecture)
NB 3/57 | Thursday, 16.15-17.00 | 07.04.2011 (Tutorial)

**Course description:**

Neuroinformatics is concerned with the discovery of new solutions to technical problems of information processing. These solutions are sought based on analogies with nervous systems and the behavior of organisms. This course focusses on three exemplary problems to illustrate this approach:

a) Artificial action (autonomous robotics)
b) Artificial perception (robot vision)
c) Artificial cognition (simplest cognitive capabilities of autonomous robots such as decision making, memory, behavioral organization)

The main methodological emphasis is on nonlinear dynamical systems’ approaches and dynamic (neural) fields.

**Proofs of academic achievement:** written examination

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**COMPUTATIONAL NEUROSCIENCE: VISION AND MEMORY**

**Language:** English

**Department:** Angewandte Informatik/Institut für Neuroinformatik

**Degree programme:** Master

**Module:** n. s.

This module is taught entirely in English.

**Course type:** Lecture and Tutorial

**Credit Points:** 2 (Lecture), 4 (Tutorial)

**Teacher/Lecturer:** Prof. Dr. Laurenz Wiskott

**Requirements:** The mathematical level of the course is mixed. There are some lectures that require almost no math and others that require a lot. The tutorial is almost entirely mathematical. 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, ...).

**Room | Day, Time | Begin**
--- | --- | ---
NB 3/57 | Tuesday, 12.15-13.45 | 05.04.2011 (Lecture)
NB 3/57 | Tuesday, 10.30-12.00 | 12.04.2011 (Tutorial)

**Course description:**

This computational neuroscience course covers models and theoretical concepts of vision and memory, such as visual receptive fields, neural map formation, visual invariances, attention, and associative memories.

**Proofs of academic achievement:** written examination
FACULTY OF PHILOLOGY

ENGLISH DEPARTMENT

http://www.rub.de/anglistik

Contact:
Room: GB 6/133
Tel: 0234/32 - 22589
Email: anglistik@rub.de
Consultation hours: Monday – Friday: 9 – 13 pm

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

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

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

A complete list can be found in the departmental university calendar: http://www.ruhr-uni-bochum.de/anglistik/courses/index_courses.htm
ADVANCED TOPICS IN THE PHILOSOPHY OF LANGUAGE: THE SEMANTICS AND PRAGMATICS OF QUOTATION

Language: English

Degree programme: Master
Module: n.s.
Course type: Seminar
Credit Points: 6
Teacher/Lecturer: Prof. Dr. Markus Werning
Requirements: none

Room
GA 04/187

Day, Time
August 22-30, 2011/ 10-18

Begin
Monday, August 22, 2011

Course description:

At first glance quotation marks are an inconspicuous syntactical means to refer to expressions of a language within the language. From the point of view of philosophy of language and philosophical semantics, there are however few syntactical constructions that raise more intricate problems. Quotation is a means of self-reference. It is part and parcel of Tarski’s recursive definition of truth and the key to many philosophical paradoxes. Quotation marks create logically opaque contexts. Its semantic analysis seems to conflict with widely accepted principles of semantics such as the principle of compositionality. This is one of the reasons why quotation has moved into the focus of attention in the philosophy of language recently again. In the seminar we will first describe various contexts in which quotation marks may occur. We will then study important recent contributions to the problem in philosophy and linguistics and aim at formulating new problem solving strategies.

The seminar is part of the program “Forschendes Lehren”. The seminar will take place in conjunction with the international workshop “The Semantics and Pragmatics of Quotation” that will take place in Bochum 26-30 September 2011 as part of the conference “Semantics and Philosophy in Europe IV”. A central part of the seminar will be a tutorial taught by an internationally renowned expert.
Students will be expected to take over a presentation. All texts and discussions will be in English. A reader will be provided. Students interested are asked to get in touch with Professor Werning at the beginning of the summer semester. Updates will be available on the internet.

Preparatory readings:

Proofs of academic achievement: n.s.

KNOWLEDGE AND ITS LIMITS

Language: English

Department: Philosophy Department
Degree programme: Master
Module: n.s.
Course type: Seminar
Credit Points: 6
Teacher/Lecturer: Dipl. Math. Caroline Semmling
Requirements: For the discussions basic knowledge in epistemology is required. Aquirements in modal logic and philosophy of mind are desirable.

Room
GABF 04/358

Day, Time
Wednesday 10-12

Begin
April 6, 2011

Course description:

The seminar is dedicated to one of the most surprising and pioneering works in modern epistemology. Timothy Williamson presents an approach to knowledge which constitutes knowledge as a genuine factive mental states which is prime and not a conjunction of purely external and internal factors. Thereby, he challenges the definition of knowledge as a justified true belief that goes back to Plato, and offers an innovative approach as an alternative to common conceptions in modern epistemology.

In the seminar we will read chapters of Williamsons book Knowledge and its Limits, one by one. We reconstruct and discuss his arguments. The participants should have the book Knowledge and its Limits on hand.


Proofs of academic achievement: Presentation
PHILOSOPHY OF EMOTIONS

Language: English

Department: Philosophy Department
Degree programme: Master
Module: n.s.
This module is taught entirely in English
Course type: Seminar
Credit Points: 6
Teacher/Lecturer: Dr. Leon de Bruin
Requirements: Knowledge in philosophy of kognition.

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<tr>
<th>Room</th>
<th>Day, Time</th>
<th>Begin</th>
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</thead>
<tbody>
<tr>
<td>GABF 04/714</td>
<td>Wednesday, 12-14</td>
<td>April 6, 2011</td>
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</table>

Course description:

What is an emotion? In particular, is there something useful that all emotions share in common, or is our folk concept of emotion deeply flawed in that it comprises very different things? In his book 'What emotions really are', Paul Griffiths explores these questions in an interdisciplinary way, investigating approaches from the philosophy of science and from several fields of science themselves, notably anthropology and (evolutionary) psychology.

In this course, we follow Griffiths in his discussion of contemporary models of emotion and his analysis of their deficiencies. We also scrutinize Griffiths own attempt to construct a basis for future models that pay equal attention to biological fact and conceptual rigor. In addition to Griffiths' book, we read several articles about philosophical conceptualizations of emotion and the study of emotion within the afore-mentioned scientific disciplines. Here we also focus to some extent on the question how we recognize and understand our own emotions and those of others.

Literature:


Selected Articles (final selection will be available on Blackboard for registered participants):


Griffiths, P. E. 2004. Emotions as natural and normative kinds, Philosophy of Science, 71(5s), 901-911

James, W. 1884. What is an Emotion?, Mind, 9, 188-205.


Proofs of academic achievement: The 'unbenoteter Schein' is based on a presentation and a written summary. The 'benoteter Schein' is based on a presentation in combination with a final paper.

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THE PHILOSOPHY OF FATE: GOD, NATURE AND LOGIC

Language: English

Department: Philosophy Department
Degree programme: Master
Module: n.s.
This module is taught entirely in English
Course type: Seminar
Credit Points: 6
Teacher/Lecturer: Dr. Greg Sax
Requirements: none

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<tr>
<th>Room</th>
<th>Day, Time</th>
<th>Begin</th>
</tr>
</thead>
<tbody>
<tr>
<td>GABF 04/358</td>
<td>Wednesday, 12-14</td>
<td>May 4, 2011</td>
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</tbody>
</table>

Course description:

According to the thesis of fatalism: (I) all future human acts are already (and always were) inevitable and unpreventable; (II) consequently, none will be performed freely.
(For an entertaining presentation, see: http://vids.myspace.com/index.cfm?fuseaction=vids.individual&VideoID=9135903.)

Fatalism has been the subject of perpetual and lively discussion since Aristotle first raised the issue. Arguments on the basis of causal determinism and divine omniscience have dominated the history of the dispute, and they remain interesting and worth pursuing despite the fact that these theses are no longer as uncontroversial as they once were. However, the most fascinating fatalistic arguments rest on less controversial considerations like the principle of bivalence and the correspondence theory of truth.

As these remarks indicate, the surprisingly wide range of the fatalist discussion includes (among much else) the natures of truth, necessity and contingency, freedom and moral responsibility, time and the future, and eternity and divinity; the truth of the bivalence principle and 3-valued logic; and the possibility of knowledge of the future.

The seminar will be conducted in English. Since this class will not start before the first week of May, we will meet once for an extended seminar on a Saturday (Wochenendseminar).

Proofs of academic achievement: Presentation
INSTITUTE OF EDUCATIONAL SCIENCE

http://www.ife.rub.de

Contact:
Name: Dr. Ute Lange
Room: GA 1/133
Tel: 0234/32-24982
Email: ute.lange@rub.de
Consultation hours: Tue and Thu: 4 - 6 pm

EDUCATIONAL DEVELOPMENTS IN COMPARATIVE PERSPECTIVES

Language: English

Department: Comparative Education
Degree programme: Bachelor of Arts/Master of Education
Module: A 5.: Internationale Bildungsentwicklung und interkulturelle Pädagogik
Course type: Seminar
Credit Points: 4
Teacher/Lecturer: Prof. Dr. Christel Adick
Requirements: Basic knowledge in Educational Sciences

Room | Day, Time | Begin
--- | --- | ---

Course description:

The main aims of the seminar are: (a) to raise awareness of some educational topics which are commonly debated around the world, and (b) to introduce research-oriented learning methods for enquiries on global developments in education.

For this sake, the seminar will be based on: (a) texts compiled in a reader, which will be distributed at the beginning of the course, and (b) internet-based research conducted individually, and in tandems or groups on the Education For All (EFA) Programme of the United Nations Educational, Scientific and Cultural Organisation (UNESCO).

Accordingly, participants will have to work on the following two assignments for their proof of academic achievement (‘Kleine Studienleistung’/4 CP):

In the first part some internationally debated issues will be discussed, e.g. peace education, discrimination in education in the European Union, the importance of information & communication technology (ICT) in national education systems, international research on gender roles in text-books, etc. Participants are asked to write and present a summary of one of these articles which are compiled in the reader, also distributing their summary (3-5 pp.) in class.

In the second part of the course the websites of the UNESCO will be screened for general information on EFA, definitions of empirical indicators (e.g. Gender Parity Index) and available data on educational enrolments in practically all the countries of the world. Participants are asked to choose one country each and write a country profile using the data of the yearly Global Monitoring Reports (available online and also in print in the library of the Institute of Education). The individual country profiles will be discussed and compared in tandems or groups which are formed according to world regions (e.g. Latin America, South East Asia, etc.) in order to prepare a presentation for plenary discussion. Participants will have to decide at the beginning of the course...
if they want to prepare the reports of their country profiles and group work individually or collectively for assessment.

The assignments may be written and presented either in English or in German.

Proofs of academic achievement: see above

HOW TO CREATE COMPUTER-BASED LEARNING MATERIALS: PRINCIPLES AND PRACTICES (BLOCK COURSE)

Language: English

Department: Research on learning and instruction
Degree programme: Bachelor of Arts / Master of Education
Module: A 6:Lernen und Lehren
Course type: Seminar
Credit Points: 4
Teacher/Lecturer: Martina Rau
Requirements: Basic knowledge in Educational Sciences

Day, Time, Room
Sat 07.05.2011, 14.00-18.00, GA 03/42
Sat 14.05.2011, 10.00-18.00, GA 2/41
Sun 15.05.2011, 10.00-18.00, GA 2/41
Sat 28.05.2011, 10.00-18.00, GA 2/41
Sun 29.05.2011, 10.00-18.00, GA 2/41

Course description:

Computer-based learning systems are becoming more and more prevalent. Their effectiveness, however, depends largely on their design. In this practice oriented seminar, you will learn about theoretical and methodological principles to guide the design of effective computer-based learning environments. You will apply these principles as you in small groups to create an interactive learning system for a domain of your choice. Specifically, you will learn how to build a type of intelligent tutoring system: cognitive tutors. These are learning systems that respond adaptively to students' actions by providing hints and error feedback that are designed to remedy misconceptions as identified by specific student errors. The seminar will take place on three weekends. On each weekend, research-based principles on computer-supported learning will be introduced and discussed, and then applied to each group's tutoring systems. Topics covered include the use of text and graphics, multi-media support such as interactive graphics and animations, self-explaining, worked examples, and cognitive task analysis, difficulty factors analysis, and principles of task sequencing.

Please note: The course is offered in English and addresses both international and German students. If no international students sign up, the course sessions will be held in German, but the readings will remain in English, due to organizational constraints.

Proofs of academic achievement: n. s.
The Faculty of Physics and Astronomy offers a broad range of courses in English. Detailed information can be found at [www.physik.rub.de/studium/vorlesungsverzeichnis](http://www.physik.rub.de/studium/vorlesungsverzeichnis). Please have a look at the notice board at NB 02 Nord for changes and dates.

Courses start at the next possible date after lectures start in summer semester (04/04/2011). Details concerning exercises will be fixed during the corresponding lectures.

**MASTER OF SCIENCE / DIPLOM**

<table>
<thead>
<tr>
<th>Course Nr</th>
<th>Course Title</th>
<th>Day, Time</th>
<th>Room</th>
<th>Language</th>
<th>Lecturer</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>160 307</td>
<td>Exploring Condensed Matter via x-rays and Neutrons</td>
<td>Thur. 08.30-10.00</td>
<td>NB 4/158</td>
<td>English or German</td>
<td>Zabel</td>
<td></td>
</tr>
<tr>
<td>160 308</td>
<td>Exercise: Exploring Condensed Matter via x-rays and Neutrons</td>
<td>Thur 10.00-12.00,</td>
<td>NB 4/158</td>
<td>English or German</td>
<td>Zabel</td>
<td></td>
</tr>
<tr>
<td>160 309</td>
<td>Nanomagnetismus</td>
<td>Fri. 09.00-11.00</td>
<td>NB 4/158</td>
<td>English or German</td>
<td>Petracic</td>
<td></td>
</tr>
<tr>
<td>160 310</td>
<td>Exercise Nanomagnetismus</td>
<td>Fri. 11.00-12.00</td>
<td>NB 4/158</td>
<td>English or German</td>
<td>Petracic</td>
<td></td>
</tr>
<tr>
<td>160 311</td>
<td>Magnetism in Condensed Matter</td>
<td></td>
<td></td>
<td>English or German</td>
<td>Zabel</td>
<td></td>
</tr>
<tr>
<td>160 312</td>
<td>Exercise Magnetism in Condensed Matter</td>
<td></td>
<td></td>
<td>English or German</td>
<td>Zabel</td>
<td></td>
</tr>
<tr>
<td>160 315</td>
<td>Application and Implementation of Electronic Structure Methods</td>
<td>Fri. 10.00-14.00</td>
<td>NB 7/173</td>
<td>English</td>
<td>Drautz, Neugebauer, Madsen</td>
<td>Lecture, teamwork &amp; practical exercises</td>
</tr>
<tr>
<td>160 316</td>
<td>Quantum Mechanics in Material Science</td>
<td>Mon. 09.00-11.15</td>
<td>NB 4/158</td>
<td>English</td>
<td>Drautz</td>
<td>Lecture &amp; Seminar</td>
</tr>
<tr>
<td>160 317</td>
<td>Interfaces and surfaces</td>
<td>Thur. 10.00-14.00</td>
<td></td>
<td>English</td>
<td>Drautz, Janisch, Rogal Hammerschmidt</td>
<td>Lecture &amp; Seminar</td>
</tr>
<tr>
<td>160 318</td>
<td>Stochastische Prozesse</td>
<td>2 hours, by appointment</td>
<td></td>
<td>English</td>
<td>Spatschek</td>
<td></td>
</tr>
<tr>
<td>160 319</td>
<td>Exercise Stochastische Prozesse</td>
<td>1 hour, by appointment</td>
<td></td>
<td>English</td>
<td>Spatschek</td>
<td></td>
</tr>
<tr>
<td>160 324</td>
<td>Seminar: “Methods of quantum field theory in solid state and high-energy physics”</td>
<td>Fri. 16.00-18.00</td>
<td>NB 6/73</td>
<td>English</td>
<td>Eremin, Polyakov</td>
<td>s.a. 160 425</td>
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</table>
## Nuclei and particle physics

<table>
<thead>
<tr>
<th>Course Nr</th>
<th>Course Title</th>
<th>Day, Time</th>
<th>Room</th>
<th>Language</th>
<th>Lecturer</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>160 406</td>
<td>Nukleosynthese in der Nuklearen Astrophysik</td>
<td>Fri. 12-14.00</td>
<td>NB 2/170</td>
<td>German or English</td>
<td>Ritman, Stockmanns</td>
<td>5 Credits</td>
</tr>
<tr>
<td>160 407</td>
<td>Seminar zu Nukleosynthese in der Nuklearen Astrophysik</td>
<td>Fri. 10-12.00</td>
<td>NB 2/170</td>
<td>German or English</td>
<td>Ritman, Stockmanns</td>
<td></td>
</tr>
<tr>
<td>160 425</td>
<td>Methods of quantum field theory in solid state and high energy physics</td>
<td>Fr 16.00-18.00</td>
<td>NB 6/73</td>
<td>English</td>
<td>Polyakov, Eremin</td>
<td>s.a. 160 326</td>
</tr>
</tbody>
</table>

## Plasma and atomic physics

<table>
<thead>
<tr>
<th>Course Nr</th>
<th>Course Title</th>
<th>Day, Time</th>
<th>Room</th>
<th>Language</th>
<th>Lecturer</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>160 504</td>
<td>Plasma chemistry</td>
<td>Mon. 15.15-17.00</td>
<td>NB 5/158</td>
<td>English</td>
<td>Benedikt</td>
<td></td>
</tr>
<tr>
<td>160 505</td>
<td>Exercise Plasma chemistry</td>
<td>Mo 17.15-18.00</td>
<td>NB 5/158</td>
<td>English</td>
<td>Benedikt</td>
<td></td>
</tr>
<tr>
<td>160 506</td>
<td>Quantentheorie des Lichts II</td>
<td>2 hours By appointment</td>
<td>NB 2/170</td>
<td>German, English or French</td>
<td>Rosmey</td>
<td></td>
</tr>
<tr>
<td>160 508</td>
<td>Production and investigation of highly charged ions</td>
<td>Fri. 14.15-16.00</td>
<td>NB 3/99</td>
<td>German or English</td>
<td>Träbert</td>
<td>dates possibly compressed into fewer days, optionally in english</td>
</tr>
<tr>
<td>160 509</td>
<td>Plasma-Wand-Wechselwirkung in Fusionsplasmen</td>
<td>Tue. 12.00-14.00</td>
<td>NB 5/158</td>
<td>German or English</td>
<td>Unterberg</td>
<td></td>
</tr>
<tr>
<td>160 520</td>
<td>European School on Low Temperature Plasma Physics: Basics and Applications</td>
<td></td>
<td>English</td>
<td>Winter, Böke</td>
<td></td>
<td>Dates compressed (lecture &amp; exercise) at the physic-centre in Bad Honnef</td>
</tr>
<tr>
<td>160 521</td>
<td>European School on Low Temperature Plasma Physics: Master Class on hot topics</td>
<td></td>
<td>English</td>
<td>Winter, Böke</td>
<td></td>
<td>Dates compressed (lecture &amp; exercise) at the physic-centre in Bad Honnef</td>
</tr>
<tr>
<td>160 526</td>
<td>Seminar zur Theoretischen Plasmaphysik</td>
<td>2 hours By appointment</td>
<td>English</td>
<td>Shukla, Eliasson</td>
<td></td>
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</tr>
</tbody>
</table>
FACULTY OF PSYCHOLOGY

http://www.ruhr-uni-bochum.de/psy-dekanat/fak-home/

Contact:
Name: Dr. Andreas Utsch
Room: GAFO 04/261
Tel: 0234/32-27895
Email: Andreas.Utsch@rub.de
Consultation hours: Thursday 3 - 4 p.m., Friday 10 - 12 a.m

BASIC NEURAL SIMULATION

Language: English

Department: Psychology
Degree programme: Bachelor
Module: Basic Neutral Simulation
Course type: Seminar
Credit Points: 3
Teacher/Lecturer: M. Yosida
Requirements: none

Room
Day, Time
Begin
GAFO 04/615 Tuesday 10 - 12 a.m. n.s.

Course description:
The goal of this seminar is 1) to understand basic electrophysiological properties of neurons and 2) to learn how to implement this knowledge into a computational model of a neuron. First, students will learn basic electrophysiological properties such as the maintenance of the resting membrane potential and the generation of an action potential through lectures. Students will then build their own neuron model using a neural simulation environment called Neuron. Simulation using computers will not only help solidify the students’ understanding of electrophysiological properties but also will allow them to use this knowledge in the future research. Acquiring this technique will enable students for example to estimate the consequence of a malfunction of certain ionic channel in a disease or to estimate the specific character of specific neuron types of their interest. Advanced students will have the opportunity to expand this single neuron model to a neural network model to simulate a role of a brain region of their interest. This course will also provide necessary skills regarding computational simulation but do not require previous experience in modeling or programming. Basic knowledge about electric circuit would be of advantage.

Proofs of academic achievement: Reports (students can chose whether they’re be graded or not).

MULTIVARIATE STATISTICS

Language: English

Department: Psychology
Degree programme: Master
Module: Multivariate statistics
This module is taught entirely in English
Course type: Seminar
Credit Points: 3
Teacher/Lecturer: V. Samarasinghe
Requirements: none

Room | Day, Time | Begin
--- | --- | ---
GAFO 04/615 | Wen 10 - 12 a.m. | 13.04.2011

Course description:
This course will cover multivariate statistics with a focus on the design and analysis of complex systems with multiple predictors. The subject will be approached from a practical viewpoint that will help the participants understand how to choose a model, form and test a hypothesis, and recognize structures and patterns within the data. As such, the course will not dwell on the mathematics behind the statistical methods and will rely on real world data. The main tool used in this course will be SPSS.

Topics:
1. Multiple Regression
2. MANOVA
3. Discriminant Analysis
4. Cluster Analysis
5. Exploratory and Confirmatory Factor Analysis
6. Canonical Correlation
8. Answer Tree

The primary language of instruction for this course is English. However, all attempts will be made to provide a German translation when necessary.

Proofs of academic achievement: n.s.

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NEUROECONOMICS

Language: English

Department: Psychology
Degree programme: Bachelor
Module: Neuroeconomics
Course type: Seminar
Credit Points: 3
Teacher/Lecturer: Kasties/Pinnow
Requirements: none

Room | Day, Time | Begin
--- | --- | ---
GAFO 04/425 | Tue 10 - 12 a.m. | 05.04.2011

Course description:
Does the stock market make sense? Is there a need to play fair? And how do you compare a law
degree to a Mars bar?

This Seminar will be an introduction to the fundamentals of neuroeconomics: We will discuss economic theories of behavior, how ‘rational’ decisions are modulated by emotional and evolutionary history as well as the neuronal systems underlying decision making and reward.

Proofs of academic achievement: Students will be expected to present chosen topics and actively participate in the discussion of current research literature.

MATHEMATICAL PSYCHOLOGY

Department: Psychology
Degree programme: Bachelor
Module: Mathematical Psychology
Course type: Seminar
Credit Points: 3
Teacher/Lecturer: S. Cheng
Requirements: none

Room
GA 04/187
Day, Time
Wednesday 2 - 4 p.m.
Begin
n.s.

Course description:
The use of mathematical models and methods in psychology has a long history dating back to the 1800s. In this course, we will use an intuitive approach to mathematical psychology, rather than dwell on rigorous mathematics. The topics will include perception, decision-making, memory and learning. The mathematical methods covered will range from simple equations with two variables to simulations of large neural networks.

This course will be taught in English and includes lectures, student presentations and practical exercises in a computer lab. Previous experience with software such as Mathematica & Matlab is not a requirement. This course is open to Bachelor students of more quantitative disciplines who would like to see mathematics applied to the description of behavior and cognition.

Proofs of academic achievement: n.s.

SOCIAL COGNITION AND PSYCHOPATHOLOGY

Department: Psychology
Degree programme: Master
Module: Social cognition and psychopathology
Course type: seminar
Credit Points: 3
Teacher/Lecturer: Williams
Requirements: none

Room Day, Time Begin
GA 04/187 Wen 2 - 4 p.m. n.s.

Course description:
This course will examine selected topics in social cognitive theory and its approach to psychopathology. These include the consistency and variability of behavior across situations, reciprocal causation among persons, their environments, and behavior; social cognitive models of emotion and motivation; clinical versus statistical prediction of behavior; self-efficacy theory; and traits and mental disorders contrasted with social cognitive "person variables."

Proofs of academic achievement: n.s.

SPATIAL NAVIGATION AND MEMORY

Language: English

Department: Psychology
Degree programme: Master
Module: Spatial Navigation and memory
Course type: seminar
Credit Points: 3
Teacher/Lecturer: M. Yosida
Requirements: none

Room Day, Time Begin
GA 04/187 Thursday 2 - 4 p.m. n.s.

Course description:
This seminar focuses on the function of the medial temporal lobe (MTL) in spatial navigation. Single unit recordings from areas in the MTL such as the hippocampus and the entorhinal cortex during spatial tasks have been providing vast amount of insight to the function of the MTL. ‘Place cells’ in the hippocampus fire dependent on the location of an animal in an environment, ‘head direction cells’ in the presubiculum fire dependent on the direction of animal’s head, and ‘grid cells’ in the entorhinal cortex fire at many locations to form a hexagonal grid that covers each 2D environment. The fact that neurons from different subregions of the MTL provide different types of navigational representation suggests a functional segregation within the MTL. ‘Theta phase precession’ of the place cells and the grid cells provides evidences for phase coding and an optimized firing pattern for synaptic plasticity. The ‘replay’ of activity of place cells during sleep provides evidences for the possible role of the MTL in memory consolidation.

Finally, we will study the underlying mechanism for place representation with an overview of computational models. This course will take the form of a journal club but some background knowledge will be provided during lecture.

Proofs of academic achievement: Presentation (students can chose whether they’re graded or not)
NEW ISSUES IN PHYSICAL CONDITIONING APPLIED TO INTERMITTENT SPORTS

Language: English

Department: Lehrstuhl für Trainingswissenschaft
Degree programme: Master
Module: Modul 1: Optionale Studien
This module is just partly taught in English
Course type: Seminar
Credit Points: 3
Teacher/Lecturer: Dr. Jaime Fernandez-Fernandez
Requirements: Bachelors Degree

Room
Day, Time
n. s. 14. – 17.06.2011
Begin Briefing on 02.02.2011, HMA SR

Course description:
This seminar will present new issues applied to training in intermittentsports (e.g., football, tennis, handball, basketball...). These may include: the adaptations to anaerobic and aerobic training, including acute vs chronic responses; detraining and concurrent strength and endurance training. Also, the seminar examines the advanced study of resistance training (e.g., sportsspecific resistance training and power optimization for elite athletes and teams). Important issues related to fitness and training in intermittentsports will be also discussed, including warm-up, injury and rehabilitation.

Proofs of academic achievement: n. s.

This course is especially suitable for exchange students.
LANGUAGE COURSES

CENTER FOR FOREIGN LANGUAGE TRAINING

www.rub.de/zfa

Contact:
Ms. Jennifer Wenderoth
Tel: 0234/32- 28182
Email: zfa@rub.de

a) Language Courses
The Centre for Foreign Language Training (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 Language Centre currently offers classes for 20 different languages, such as:
Arabian, Chinese, Danish, Dutch, English, French, Hungarian, Italian, Japanese, Croatian/Bosnian/Serbian, Greek, Norwegian, Polish, Portuguese, Russian, Swedish, Spanish and Turkish.

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 in addition to regular studies. These courses are designed for the special needs of foreign students, doctorals and guest 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® (English, French, Italian, Polish, Russian, Swedish, Spanish)
DELE (Spanish)
CNaVT (Dutch)
Swedex (Swedish)

d) Individual Learning
The ZFA also provides various opportunities for individual learning and offers support via counselling individual assistance:
- Tandem (Partners with different mother tongue that exchange and support one another in learning the other language)
- Centre for self-organized learning
- Language-learning counselling
Impressum

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