



**TECHNISCHE
UNIVERSITÄT
DRESDEN**

<http://tu-dresden.de/fgh>



**FACULTY OF FOREST,
GEO AND HYDRO SCIENCES**

PREFACE

Dear reader,

it is a great pleasure for me to present you the 2006 brochure on the Faculty of Forest, Geo and Hydro Sciences.

The Faculty of Forest, Geo and Hydro Sciences at TU Dresden, which was founded in 1994, incorporates various different disciplines. They address research and development of the natural and the cultural environment. Having been existing over 12 years, this unit represents the largest faculty in the field of environmental and spatial development among German universities. With its 20 institutes at the three Departments Forest Sciences, Geosciences and Hydrosiences the Faculty is well equipped and prepared to face the challenges of the future. The faculty addresses the major global issues as there are:

Regeneration and protection of the resources soil and water, the almost uncontrolled growth of population, urbanization related to mega cities and shrinking cities as well, industrialization, climate change and the worldwide loss of biodiversity, as well as the alarming environmental pollution, deterioration of soil and progressing desertification. The faculty is ready to reveal systematically the causes together with the consequences and to elaborate solutions to the problems within the local, regional and global context.

The three departments cover 11 study courses. Currently almost 3000 students are enrolled. On the part of economy, the graduates are expected to recognize problems at an interdisciplinary way and to solve them in team work, applying modern methodological approaches. The master courses "Tropical Forestry and Management" and "Hydrosiences and Engineering" as well as single teaching events of other courses are rendered in English language. For more than 25 years the UNEP-UNESCO-BMU postgraduate course "Environmental Management for Developing Countries" has been taking place, having been attended hitherto by over 1000 experts from 122 countries.

I thank all members of our faculty and I am convinced that their valuable commitment will contribute - at least partly – to protect and improve the environmental conditions to make our planet sustainably worth to live on.

I hope that this preface turns you curious to read 2006 brochure more in detail.

Dresden, March 2006



Peter Werner
Dean

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1 FACULTY OF FOREST, GEO AND HYDRO SCIENCES

1.1 DIRECTORATE OF THE FACULTY OF FOREST, GEO AND HYDRO SCIENCES

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1.2 CENTRE FOR INTERNATIONAL POSTGRADUATE STUDIES OF ENVIRONMENTAL MANAGEMENT (CIPSEM)

UNEP/UNESCO/BMU International Training Programme on Environmental Management for Developing and Emerging Countries

Commissioner: Prof. Dr. rer. silv. habil. Franz Makeschin
Head: Dr.-Ing. Rolf Baur

Office: Parkstraße 5, 15th Floor, 01069 Dresden
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Member of the course



Parkstraße 5

Courses

Every year CIPSEM offers up to 5 training courses on environmental management solely to be attended by experts from developing and emerging countries.

Two types of courses are being held:

- One main course on integrated environmental management of 6 months duration (January to July) covering a broad range of environment relevant aspects and
- Several short courses of about 2 to 4 weeks on specific topics of special concern for developing and emerging countries (e.g. water, soil, waste, biodiversity, mobility, tourism, urbanization, rural land use, energy). These courses are held between September and December of every year.

Instruction is provided in English language.

The courses are based on funding from the following organizations:

- The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), Berlin, Germany,
- Technische Universität Dresden, Germany

- The United Nations Environment Programme (UNEP) Headquarters, Nairobi, Kenya,
- The United Nations Educational Scientific and Cultural Organization (UNESCO) Secretariat, Paris, France,
- The German Federal Environmental Agency (UBA), Berlin, Germany.

Representatives of each of these donor organizations constitute the International Steering Committee of CIPSEM. It meets once a year to select the fellows for the 21 full scholarships available for every course and decides on the themes of the courses to be held in the coming course term.

A curriculum committee meets several times a year to guarantee the high scientific level of the postgraduate training, suggests on the courses offered and develops new ideas for their curricula. It consists of members of the faculty of Technische Universität Dresden and other research institutions.

Theoretical as well as practical knowledge is conveyed. Worldwide linkages are created or enhanced by and among participants coming from all over the world, about equally distributed by region and with only one or a maximum of two per course coming from the same nation. As many as 1261 participants from 127 countries (as of December 2005) have attended the courses. CIPSEM's alumni multiply that what they have learnt and acquired in Dresden, being persons in the home society who mobilize towards environmental management in social, cultural and economic questions of development.

Research Areas

During the courses participants are required to investigate several subject areas of the broad field of environmental management for case studies and final papers, which are of special concern to their native countries.

Special Tasks

- Mediator of the capacity building programmes for sustainable development of the United Nations
- Focal point for the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) providing specialists contacts to environmental administration and institutions in developing and emerging countries
- Focal point for international environmental management at TU Dresden,
- Providing international resource persons (lecturers and course participants) for stakeholders of Local Agenda 21 for Dresden, thereby enabling the city of Dresden to have a broader view of its LA 21 programmes
- Organizing the CIPSEM environmental expert's network linking former course participants and present resource persons. It serves as a forum for the exchange of ideas about all issues related to sustainable development and environment

- Publishing information and teaching materials in English language about course-specific subjects of protection and sustainable use of natural resources

Technical Facilities

Training center with

- Single-Room apartments for 21 course participants all equipped with complete furniture, private shower, a kitchenette with cooking utensils and a refrigerator, telephone and PC with internet access located right in the city center
- Reference library with international literature on environmental topics and internet access
- Computer pool
- Clubroom

Besides this, all the facilities for local students of Technische Universität Dresden such as computer pools, the main campus library (SLUB), university restaurants, gymnasiums etc. can be used.

1.3 PROFESSORSHIP IN SPATIAL DEVELOPMENT

Prof. Dr. rer. nat. Dr. rer. hort. habil. Dr. h.c. Bernhard Müller
(Prof. Müller is Director of the Leibniz Institute of Ecological and
Regional Development, Dresden)

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Courses

The Professorship focuses on the following subjects

- Spatial planning
- Planning instruments
- Regional management
- Institutional aspects of regional development processes
- Inter-communal co-operation and regional governance
- Regional and communal development concepts
- International development policy

In the following courses:

- Diplom* courses: Geography, e.g. Spatial planning and regional development;
Sub-urbanization in Germany and the USA
- Postgraduate courses: Environmental Protection and Regional Planning
- UNEP/UNESCO Postgraduate Studies
- Studium generale Technische Universität Dresden

Research Areas

- Spatial planning
- Planning instruments
- Regional management
- Institutional aspects of regional development processes
- Inter-communal co-operation and regional governance
- Regional and communal development concepts
- International development policy

* academic degree at German Universities, similar to Master degree

Special Tasks

- Director of the Leibniz Institute of Ecological and Regional Development (IOER)
- Vice President of the Leibniz Institute Association
- Speaker of Section 2 of the Leibniz Association (Economic, social and spatial research)
- Director of the Dresden Flood Research Center (D-FRC)
- Deputy Director of the Dresden Center for Spatial Development Research
- Elected member of the German Academy for Spatial Research and Regional Planning (ARL), Hannover
- Member of several scientific councils, e.g. International Building Exhibition Fürst-Pückler-Land
- Member of the Network of Spatial Development Research Institutes in Central and Eastern Europe
- Member of the Federal Advisory Council for Spatial Planning
- Expert consultancy for DBU, the European Union (research program) and GTZ (Editor of the Central and Eastern European Development Studies (Springer Publications))
- Honorary PhD from the Slovak University of Technology, Bratislava

Technical Facilities

The facilities of the Institute of Ecological and Regional Development (www.ioer.de) are used by the Professorship.

Publications (Selection)

MÜLLER, B.: CURWELL, S. / TURNER, J. (2005): Model for the improvement of LUDA development of collaborative strategic goal oriented, programming (CoSGOP). In: *Urbanistica DOSSIER* 8(2005)74: Methodological and theoretical aspects of the european research LUDA. Improving the quality of life in Large Urban Distressed Areas, S. 14-19.

MÜLLER, B. (Hrsg.): FINKA, M. (Hrsg.) / LINTZ, G. (Hrsg.): Rise and Decline of Industry in Central and Eastern Europe. A Comparative Study of Cities and Regions in Eleven Countries. *Central and Eastern European Development Studies (CEEDES)*. Berlin: Springer, 2005, 274 S.

MÜLLER, B.: Redes de Cooperación y el Dilema de la Participación. In: Hernández, J.R. (Hrsg.): *Ordenamiento Territorial - Regiones Activas y Capacidades Locales*. Red de Cooperación Universitaria Chileno-Alemana en Ordenamiento Territorial. Concepción: Escaparate Ediciones, 2004, S. 123-129.

MÜLLER, B. (Hrsg.): LÖB, S. (Hrsg.) / ZIMMERMANN, K. (Hrsg.): *Steuerung und Planung im Wandel*. Festschrift für Dietrich Fürst. Wiesbaden: VS Verlag f. Sozialwissenschaften, 2004, 373 S.

MÜLLER, B.: SCHIAPPACASSE, P.: Desarrollo metropolitano integrado: El caso de Santiago de Chile. In: Urbano 7(2004)10. S. 68-74.

MÜLLER, B.: SIEDENTOP, S.: Wachstum und Schrumpfung in Deutschland - Trends, Perspektiven und Herausforderungen für die räumliche Planung und Entwicklung. In: Dt. Zs. f. Kommunalwissenschaften 43(2004)I, S. 14-32.

2 AFFILIATED INSTITUTIONS OF THE FACULTY

2.1 THARANDT BOTANIC GARDEN AND ARBORETUM

Director: Prof. Dr. forest. habil. Andreas Roloff
Curator: Dr. Ulrich Pietzarka
Technical Manager: Dipl.-Ing. (FH) für Gartenbau Herbert Kunze

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Arboretum



Areas of Instruction

Because of its comprehensive stock of woody plants, about 3000 taxa, and the large number of cultivated and spontaneous herbs Tharandt Botanic Garden and Arboretum is of basic significance, above all, for botanical and dendrological education. Owing to its broad ecological amplitude it offers many possibilities of teaching for the study courses of Forestry, Landscape Architecture, Environment Protection and Regional Planning as well as Tropical Forestry and Management.

Areas of Research

In cooperation with the Professorships of the Department of Forestry topics such as site requirements, climate hardiness, growth behaviour, systematics, phenology, breeding, pathology of indigenous and exotic woody plants are investigated at an interdisciplinary level. The overall target of research is to investigate the arboretum under ecological aspects as well as to continue work on botanical systematics.

Special tasks

Founded in 1811 Tharandt Botanic Garden and Arboretum is able to present many wooden species at high age classes under typical environmental conditions of Eastern Germany. Special collections on national level of Germany are Pinaceae, Fagaceae, Sapindaceae (Acer) and the genus Sorbus. There is also a large collection of Rhododendrons.

In 2001, Tharandt Botanic Garden and Arboretum started a new project - the ForestPark Tharandt - to enlarge the garden. On an area of 15.4 ha the 42 most important forest-types of North America will be arranged in a geographical way. Besides the unique presentation of the high biodiversity of this continent in Europe this new park will offer more and new possibilities of studying and teaching the competition dynamics of natural forests.

In 1997 an Environmental Interpretation Programme was established with numerous offerings of interactive courses on several different topics especially for children and young persons. Until 2005 as many as 24.000 people joined these courses. This is a very important supplement to the about 150 common guided tours for the public every year.

Tharandt Botanic Garden and Arboretum is member of Botanic Gardens Conservation International (BGCI) as well as of the Association of Botanic Gardens in Germany and also joined the International Plant Exchange Network (IPEN). It is dedicated to promoting the conservation, sustainable use and research of biological diversity in the sense of the Convention on Biological Diversity.

Together with the Institute of Forest Botany and Forest Zoology information and expert opinions are issued concerning identification, utilization and protection of woody plants as well as causes and control of tree diseases.

Technical Facilities

- Dendrological herbarium and visual objects of dendrology (seeds, cones, fruits, wood handpieces)
- Green-house for raising and overwintering plants and to present a small collection of tropical tree species
- Seed-processing facility, workshops

Publications (Selection)

KIESSLING, J.; STETZKA, K. (1997): Die Moosflora des Forstbotanischen Gartens Tharandt – Vorkommen, Ökologie, Gefährdung. *Limprichtia* (10), 1-176

PIETZARKA, U. (2005): Zur ökologischen Strategie der Eibe (*Taxus baccata* L.) – Wachstums- und Verjüngungsdynamik. *Contrib. For. Sci* (25). Ulmer Verlag, Stuttgart. 195 S.

ROLOFF, A. (2004): Trees. Phenomena of Adaptation and Optimization. ecomed Verlag, Landsberg L. 276 S.

ROLOFF, A.; PIETZARKA, U. (1996): Der Forstbotanische Garten Tharandt. Atelier am Forstgarten, Tharandt. 205 S.

WEISS, H. (2001): Informationsverwaltung in Botanischen Gärten am Beispiel des Forstbotanischen Gartens Tharandt. *Contributions to Forest Science* (14). Ulmer Verlag, Stuttgart. 194 S.

2.2 NEUNZEHNHAIN ECOLOGICAL STATION

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Dam, Neunzehnhain

*Neunzehnhain
Ecological Station*



Courses

The station focuses on

- Hydrobiology and reservoir limnology
- Land use and climate impacts on reservoir water quality
- Reservoir management and restoration

in practical training courses and excursions for

- Diplom* courses candidates (Water Management, Hydrobiology, Forestry)
- Postgraduates (Environmental Protection and Regional Planning)
- UNEP/UNESCO Postgraduate Studies

Research areas

in co-operation with the Neunzehnhain "Reservoir Limnology Group" of the Saxon Academy of Sciences at Leipzig (headed by Dr. Wolfgang Horn):

- Interactions between physical, chemical and planktonic parameters of reservoirs
- Influence of drainage area structure and utilization on trophic state and acidification of reservoirs and their tributaries
- Weather and climate impacts on reservoir ecosystems
- Reservoir operation and water quality
- Interrelationships between phyto- and zooplankton
- Nutrient and suspended matter elimination in pre-dams
- Sedimentation and sediment-water interactions
- Development of reservoir restoration measures and strategies
- Long-term monitoring of the Saidenbach Reservoir

* academic degree at German Universities, similar to Master degree

Special tasks

The Neunzehnhain Ecological Station can accommodate groups of students or guests of up to 24 persons. Several institutes of German colleges and universities carry out ecologically oriented field courses in Neunzehnhain each year. Environment and nature conservation authorities, scientific and practice partners can use the station for project meetings and conferences with up to 30 participants.

Technical facilities

- Chemical and biological laboratories
- Remote hydro-meteorological station
- Water and sediment sampling devices, field meters and data-logger stations
- Large enclosures for medium-scale in-situ experiments
- Small PC-pool, reference library
- Seminar room, meeting room, clubroom
- Kitchen for self-service
- Workshops

Publications (Selection)

PAUL, L.; SCHRÜTER, K.; LABAHN, J. (1998): Phosphorus elimination by longitudinal subdivision of reservoirs and lakes. - *Wat. Sci. Tech.* 37(2): 235-243.

HORN, H.; PAUL, L.; HORN, W. (2001): Phytoplanktonzunahme trotz fallender P-Belastung – ein Widerspruch? – *GWF Wasser und Abwasser* 142: 268 – 278.

ULRICH, K.-U.; PAUL, L.; STRIEBEL, T.; DIMITRIADIS, A.; KNOLLE, M.; BELOUSCHEK, P. (2001): Wasseraufbereitung in einer versauerten Talsperre: Entsäuerung, Pufferung und Schadstofffällung. – *Vom Wasser* 96: 159 – 172.

PAUL, L. (2003): Nutrient elimination in pre-dams – results of long-term studies. – *Hydrobiologia* 504: 289-295.

FISCHER, R.; WOLF, C.; RAHNER, D.; PAUL, L.; DEPPE, T.; STEINBERG, C.E.W. (2004): Fixation of Manganese and Iron in Freshwater Sediments through Electrochemically Initiated Processes. – I. Principles and laboratory studies. – *Aquatic Sciences* 66: 95 – 102.