International Studies in Aquatic Tropical Ecology (ISATEC)

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Description of the study programme

The study programme International Studies in Aquatic Tropical Ecology ISATEC is an international postgraduate study programme at the University of Bremen in collaboration with the associated Leibniz Center for Tropical Marine Ecology (ZMT). It aims at the joint education and specialisation of German and foreign postgraduate students in the field of tropical aquatic ecology. Students receive a broad knowledge in theoretical and applied ecology, with emphasis on concepts and methodologies for the sustainable utilisation and conservation of tropical aquatic ecosystems. Thus, general ecology as well as fisheries biology, aquaculture sciences, ecological economics and social sciences relevant to coastal planning and management are significant parts of the study programme. Successful completion of the programme will result in a Master of Science degree.

The main objectives of the ISATEC programme are to provide:

- The essentials for understanding the structure and function of aquatic ecosystems in the tropics.
- Theoretical concepts and methods for resource assessment and evaluation.
- Approaches for coastal planning and management.

Highly qualified personnel is urgently needed for the world-wide challenges of effectively assessing and managing resource use and conflicts in coastal environments. The Master of Science course in Tropical Aquatic Ecology has been developed in order to meet those challenges by providing young scientists with the necessary knowledge and skills.

Bremen is well suited for the implementation of the MSc-programme because of its high scientific standard in aquatic science, its modern scientific infrastructure, its international scientific co-operation, and its numerous lecturers experienced in teaching abroad.
Admission Criteria and Requirements
As a general rule, students wishing to participate in the ISATEC programme must have completed their undergraduate studies and hold a Bachelor of Science (B.Sc.) in biological/environmental sciences with excellent results. Applications may be submitted before the previous study degree (i.e. usually B.Sc.) has been finished, when at least 135 ECTS have been fulfilled. In those cases, admission can be granted on the condition that the previous degree will be successfully finished two weeks after the start of the lectures.

Furthermore, applicants are expected to state their motives for participation in a letter of motivation to be submitted with the application. Fluency in English according to level C1 is required and must be demonstrated for instance by a TOEFL iBT or IELTS test (unless the last academic degree was obtained from a university, in which the primary language of instruction was English; for more informations see www.fremdsprachenzentrum-bremen.de/vergleichstabelle).

It is advisable for foreign students to have some basic knowledge of the German language. This makes the arrival in Germany and the adjustment to life outside the campus much easier.

Foreigners are encouraged to apply for a scholarship in their home country to cover living expenses and travel costs. ISATEC is part of the programme “Development-Related Postgraduate Courses” of the DAAD (German Academic Exchange Service) and receives a certain number of scholarships for applicants from developing countries. Scholarship associated admission information can be found on the ISATEC webpage (www.uni-bremen.de/isatec/application-and-admission/daad-scholarship.html).

Please check current admission requirements at www.uni-bremen.de/en/masterportal/master-of-science.html

Career Perspectives
Participants of the ISATEC course will become experts in the field of tropical aquatic ecosystem research and its application to the conflicting areas of utilisation and conservation of aquatic ecosystems in the tropics. They will be
equipped to join or conduct multidisciplinary teams working in the investigation and management of tropical coastal zones or freshwater systems as well as to continue university studies (PhD) in the areas of aquatic ecology or integrated coastal zone management.

Employment may be found with national and international organisations involved in research and nature conservation projects, governmental institutions dedicated to coastal systems and resource management, consulting agencies involved in environmental approval work, universities and with organisations dedicated to developmental aid (GTZ, DAAD, DED, CIM etc.).

**Curriculum**

The first two terms consist of thematic teaching modules; each is composed of weekly block courses. The more fundamental courses are offered primarily to ensure that students from different backgrounds receive the necessary training before proceeding with the more advanced courses. Most of the modules are assessed by a written examination at the end of the respective module. In addition, the participants in the first academic year must present an oral presentation (winter term) and a scientific essay (summer term) that will be graded and contribute to the final MSc grade.

Experimental field and laboratory work is carried out during a two-week excursion in the first term.

During the third term, participants are required to study at one of the partner institutions of the ZMT/University of Bremen, where students carry out field work and data collection for their MSc thesis.

The thesis is carried out during the fourth semester under the guidance of an ISATEC professor and a professor based at the partner institution.

The master thesis has to be written in English. Each student must present an oral seminar of his/her thesis work.
First (winter) term at the University of Bremen

Module I: AQUATIC ECOLOGY
- Concepts of aquatic ecology
- Tropical coastal ecosystems
- Introduction to marine microbiology
- Aquatic flora & fauna

Module II: RESOURCE USE & ASSESSMENT
- Introduction to fisheries biology
- Monitoring of marine ecosystems/GIS
- Tropical aquaculture and its physiological basics
- Tropical fisheries & catching methods

Module III: FUNDAMENTALS OF SCIENTIFIC WORK
- Introduction to systems analysis
- Experimental design & advanced statistics
- Scientific writing

Module IV: SEMESTER STUDY AND ITS ORAL PRESENTATION
- Oral Presentation
Second (summer) term at the University of Bremen

Module V: THE ABIOTIC ENVIRONMENT
- Fundamentals in physical oceanography
- Biogeochemical cycling of elements in the aquatic environment
- Aquatic pollution
- Coastal geomorphology & coastal processes

Module VI: COMPUTER USE & MODELLING
- Population dynamics & stock assessment
- Trophic modelling of ecosystems
- Modelling spatio-temporal dynamics
- Modelling in conservation biology

Module VII: COASTAL PLANNING & MANAGEMENT
- Ecological economics & social-ecological systems
- Participatory techniques & stakeholder analysis
- Interdisciplinary themes between natural and social sciences
- Law of the sea and international environmental marine law

Module VIII: SCIENTIFIC ESSAY
- Scientific essay

Third (winter) term at a partner institution
Field work and data collection for MSc thesis

Fourth (summer) term at the University of Bremen
Thesis seminar and completion of thesis

Junior scientists and technicians assist with the laboratory work. In addition to the formal lectures and class work, students are encouraged to do independent studies. A permanent course tutor provides assistance for course and logistic affairs.
(Research) Co-operations
The ISATEC study programme closely co-operates with associated research institutions: Leibniz Center for Tropical Marine Ecology (ZMT), Max Planck Institute for Marine Microbiology (MPI), Alfred-Wegner-Institute for Polar and Marine Research (AWI) as well as other German marine science centres in Kiel, Osnabrück and Rostock.

On the international level ISATEC holds vital cooperations with research institutions in the tropics such as the Charles Darwin Research Station (Galapagos), Aquaba Marine Science Station (Jordan), CIMAR/UCR (Costa Rica), UNHAS & UI & DKP & IPB + RISTEK (Indonesia), IBAMA & NUMA (Brazil), INIDEP (Argentina), IO (Vietnam) a.m.m.

Limited number of positions
A total of 20 positions are available each year, of which 6-8 positions are reserved for students of the DAAD scholarship.

Application deadline
The application deadline for the course starting in the following winter term is April 30. The deadline for DAAD scholarship applications in the programme “Development-Related Postgraduate Courses” is one year in advance, October 15.

Application procedure
Please use the online application system:
www.uni-bremen.de/master

For DAAD Scholarship applications follow the instructions on the web page:
www.uni-bremen.de/isatec/application-and-admission/daad-scholarship.html

For questions, please contact isatec@uni-bremen.de

Start of the study programme
The programme starts at the beginning of the winter term (WS) of each year in October. Classes in the winter term begin early in October and end late in February, the summer term (SS) period lasts from April to mid-July. In the winter term, the lecture period is interrupted by the Christmas vacation.
Duration of Study
The ISATEC MSc programme is a two year course, composed of four semesters.
The first two semesters are full time study, whereas the third term is comprised of field work at a tropical partner institution. The fourth semester includes a thesis seminar and the completion of the thesis.

Degree
Master of Science (M.Sc.) in Aquatic Tropical Ecology

Language of instruction
The programme is taught completely in English.
For foreign students German language courses run parallel to the main programme.

Study period abroad
In the third term field work at a tropical partner institution is required to get field work experience and to become familiar with problems of the use of tropic aquatic resources and environments.

Number of lecturers
About 35 professors and lectures at the University of Bremen and the associated research institutions (Leibniz Center for Tropical Marine Ecology (ZMT), Alfred Wegner Institute Helmholtz Centre for Polar and Marine Research (AWI), Max Planck Institute for Marine Microbiology (MPI) and other national and international universities and institutions contribute to teaching the ISATEC MSc-programme and thesis supervision).
Contact and Advisory

Internet address of the study programme
www.uni-bremen.de/isatec

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