Elective 2
Plantation Forestry
Forests and Climate Change

Module No.	**Module name**
P 1	Plantation Forestry

Module coordinator

Prof. Dr. Dr.h.c. G. Becker Email: institut@fobawi.uni-freiburg.de

Additional teaching staff

Prof. Dr. Bauhus, Dr. B. Pokorny, Dr. L. Nutto, (Prof. Dr. Oesten – ist noch abzuklären)

Syllabus

Students learn objectives, strategies, concepts and management of large scale plantation forestry and pulp production as a case study. Based on the example of southamerican integrated forest/pulp company,

including

- The ecological, legal and social framework of forest management and pulp-production;
- Soil and site conditions, climate, selection of species including clones, soil preparation and fertilizing, planting
- Risks and pest management
- Stand management for pulp and sawnwood as an value added by product
- Harvesting strategies and transportation logistics
- Short, middle and long term planning based on forest inventory
- Products of pulp and other wood products, bio-energy
- Business plan
- markets and marketing, certification and future role of CO_2-certificates

Based upon this data tasks (groups of 5 persons each) of specific topics will be done by the students under supervision of experts in the corresponding subject. The aim is to analyse data critically and to find solutions for specific problems or tasks.
The students will present and discuss the outcomes with all participants of the module and write a final report .

Learning goals and qualifications

The overall learning goal is that the students learn to make a critical science and knowledge based evaluation of an enterprise based on plantation forestry and pulp production in order to optimise the management of natural resources, wood harvesting, transportation logistics and production processes. The students include into their assessment and decision making legal, social and natural restrictions in their decision taking.

The candidates will be qualified in elaborating and / or optimising management and business plans under realistic and practical conditions, considering existing and future socio-economical and socio-ecological circumstances of specific countries or regions.

The students will learn to work in a team, to discuss different point of views and at least to find compromises for future activities. They also will be trained in presenting results in an convincing and professional way and how to write detailed reports with essential information for further decision taking.

Teaching and learning methods

Case study, comprising; lecture, didactic discussion, groupwork, oral presentation, report writing;

Relevance/use of the module

The module enables the students how to apply theoretical knowledge in management practice of an enterprise and to solve related economical, ecological and social problems. The training includes how to work in teams, to present results in an oral and written way to a specific audience is essential for the professional integration in companies.

Prerequisites

None

Requirements for registration

Basic knowledge in forest ecology, forest management, forest utilization and forest economy;

Distribution of work load

Contact hours	43 h (Lectures, groupwork, oral presentation of the results)
Student learning	82 h (Preparation and structuring of groupwork, oral presentations, reading, calculations and report writing)

Proposed assessment

Assessment of the (final) oral presentation and of the written report of defined tasks, which are elaborated by groups of 5 to 6 students.

Link to learning resources

http://www.forst.uni-freiburg.de/fobawi/institut/

Preliminary Reading

Brown,C.. The global outlook for future wood supply from forest plantations. No. GFPOS/WP/03, 1-145. 2000. Rome, FAO. Working Papers. (WEB)

Cossalter,C., Pye-Smith,C.. Fast-Wood Forestry. -50. 2003. Indonesia, CIFOR. (WEB)

FAO. The Eucalypt Dilema. FAO Working papers , 26. 1985. Rome, FAO. (WEB)

FAO. Afforestation and plantation forestry. Kanowski, P. J. Volume 3, Topic 12, -84. 1997. Rome, FAO. XI World Forestry Congress, Antalya, Turkey. 13-10-1997. (WEB)

FAO, 2001. State of the World´s Forest. FAO, Rome. (WEB)

Stape,J.L.. Production ecology of clonal Eucalyptus plantations in northeastern Brazil. -225. 2002. Colorado State University, Fort Collins, Colorado. (WEB)

Comments

Module No.	Module name
P 2	Forests and Climate Change

Module coordinator

Prof. Dr. Helmut Mayer Email: helmut.mayer@meteo.uni-freiburg.de

Additional teaching staff

Prof. Dr. E.E. Hildebrand, Prof. Dr. H. Rennenberg, Prof. Dr. H. Spiecker, Prof. Dr. K.-R. Volz

Syllabus

1. Climate Change (4 days) (Mayer/Rennenberg)

1.1 Atmospheric processes significant to climate change (1 day) (Mayer)

1.2 Atmospheric features of climate change (1 day) (Mayer)

1.3 Effects of climate change on processes in trees (1 day) (Rennenberg)

1.4 Effects of climate change on forests and biogeochemical cycles (1 day) (Rennenberg)

2. Climate Change Policy (1 day) (Volz)

Background, state of affairs and problems of the actual national and international policies and processes on climate change

3. Soil-Atmosphere Interactions (5 days) (Hildebrand)

3.1 The importance of soils in the global carbon cycle

3.2 Key parameters of carbon storage and dynamics in soils

3.3 Change of the “chemical climate” and forest soil drift

3.4 Soils as sources and sinks of gases

3.5 Land use change and soil carbon

4. Impacts of Climate Change on Forest Growth (5 days) (Spiecker)

4.1 Growth parameters as indicators for climate change (1 day)

4.2 Growth – climate relations (1 day)

4.3 Forest management and climate change (1 day)

4.4 Selected case studies (2 days)

Learning goals and qualifications

The students will

- realise the atmospheric fundamentals of climate change,

- understand the interaction of increasing atmospheric CO_2, increasing surface temperature, and enhanced UV radiation with physiological processes in trees,

- learn the consequences of these interactions for ecosystem processes and biogeochemical cycles, in particular of carbon,

- understand the actual climate change policies concerning the main actors and institutions, political processes and instruments,

- understand the principles of soil-atmosphere interactions and the effects of land use change,

- learn fundamentals of forest growth impacted by climate change.

Teaching and learning methods

Lectures, tutorials, pracs, excursions

Prerequisites

none

Requirements for registration

none

Distribution of work load

Contact hours	80 h (Lectures, pracs, excursion, exam)
Independent learning	45 h (Preparation, reading etc.)

Proposed assessment

Written exam

Link to learning resources

Preliminary Reading

IPCC (2001): Climate Change 2001 – The scientific basis. Cambridge: Cambridge University Press. 881 S.

Oberthür, Sebastian; Ott, Hermann (2002): Das Kyoto-Protokoll: internationale Klimapolitik im 21. Jahrhundert. Opladen: Leske + Budrich. 440 S.

Comments