ES 310 CHANGE OF ECOSYSTEMS AS A RESULT OF LONG-TERM HUMAN ACTIVITIES IN SOUTHWEST GERMANY AND THE SWISS ALPS

IES Abroad Freiburg

DESCRIPTION:

Students will be introduced to the natural history, cultural history, ecology, and management of different ecosystems in south west Germany and the Swiss Alps. This course will teach that current ecosystems are a result of the interaction between natural and anthropogenic factors on various scales in time and space. In some examples of ecosystems students will learn to recognize and analyze the benefits and problems created by long-term human activities. This course includes several one-day excursions, field trainings and a two-day field study trip to the Swiss Alps.

CREDITS: 3 credits

LANGUAGE OF INSTRUCTION: English

PREREQUISITES: Basic knowledge of ecology / natural resource management

METHOD OF PRESENTATION:

- Lectures
- Contributions of students (presentations)
- Discussions
- Several field study trips

REQUIRED WORK AND FORM OF ASSESSMENT:

- Short presentation in small groups (20%),
- Course-related trip reports (30%)
- Final exam (30%)
- Oral contribution based on required readings and lectures (20%)

LEARNING OUTCOMES:

By the end of the course students will be able to:

- understand current ecosystems as a result of anthropogenic and natural factors.
- analyze the structure and dynamics of ecosystems using discussed methods.
- assess ecological risks and opportunities under changing environmental conditions.
- understand regional concepts of nature protection and nature reserves and conflicts with tourism.
- communicate the gained knowledge in oral (short presentation, discussions) and written form (field report).

ATTENDANCE POLICY:

IES Abroad courses are designed to take advantage of the contributions of the instructors, and the lecture/discussion format is regarded as the primary mode of instruction. Regular class attendance is mandatory. For every day of unexcused absence the final grade in the course will be reduced by one fraction of a grade (i.e. A becomes A -).Tests/presentations missed during unexcused absences cannot be made up. If a student misses a class it is their responsibility to catch up on everything that was covered in class. If a student cannot attend class due to illness then they should arrange to see a doctor who can issue a doctor's note. Without a doctor's note, an absence will count as unexcused absence. If a student misses more than 25% of class time, whether excused or unexcused, the student will receive an F in the course.

Absences due to religious observances and family emergencies may be excusable at the discretion of the Center Director.

CONTENT:

1st week		

	Afternoon	**Afternoon**
Mon **27.3.** **No class**	-Reading: Ellenberg H. (2009) : Chapter A1; Chapter A2	
Tue **28.3.** **9:15-12pm**	-Welcome and introduction to course resources & structure -Introduction to the natural history and biogeography of south west Germany -Assignments of topics and readings for short presentations	-Reading: Schweingruber, F.H. (1996), Anstett, M., Bogenrieder, A. (2005)
Wed **29.3.** **9:15-12pm**	-How to determine the influence of regional climate, climate change and human activities on forest ecosystems -Class discussion	
Thu **30.3.** **9:15-12pm**	-Field training: analysing the influence of climate and human activities on an ancient box forest (nature reserve "Buchswald") in the Southern Upper Rhine Valley	-Report
Fri **31.3.** **No class**	-Preparation for student presentations	-Reading: Ellenberg H. (2009): Chapter B4 Spieker, H. (2003) -Report
2nd week		
	Afternoon	**Afternoon**
Mon **3.4.** **9:15-12pm**	-Introduction to the cultural and natural history and ecology of mountain-forest ecosystems in the Black Forest. Possible guest lecturer.	-Preparation for student presentations
Tue **4.4.** **9am-13:30pm**	-Course-related trip to managed and unmanaged forests in and around St. Wilhelmer Tal.	-Reading: Ellenberg H. (2009): Chapter D1; Chapter D9 Otti Wilmanns (1988): English abstract -Report
Wed **5.4.** **9:15am-16:30pm**	-Introduction to the ecology (e.g. climate influence), land use and cultural history of semi-arid ecosystems in the Upper Rhine Valley -Class discussion	-Student presentations

Thu 6.4. 9am-14pm	-Hiking course-related trip through various semi-arid ecosystems (poor grasslands, vineyards and forests) in the low volcanic mountain range of the Kaiserstuhl (nature reserve "Badberg").	-Report -Reading: Schuhmacher, S., Bugmann, H. (2006) Ellenberg H. (2009): Chapter B5
Fri 7.4 9:15am-12pm	-Biogeography of the Swiss Alps and change of ecosystems in the Rhone Valley. Possible guest lecturer: research group Prof. Scherer-Lorenzen	
3rd week		
	Morning	**Afternoon**
Mon 10.4. 9am-17pm	Course-related trip to the Swiss Alps: -Bus tour to the Swiss Alps	Course-related trip to the Swiss Alps: -Long term land use and the effects on present ecosystems -Nature reserves and conflicts with land use
Tue 11.4. 9am-16pm	-Course-related trip to the Swiss Alps: -Long term land use and the effects on present ecosystems -Ecosystem research programs -Nature reserves and conflicts with land use	-Course-related trip to the Swiss Alps: -Nature reserves and conflicts with land use -Ecosystem research programs
Wed 12.4. 9am-17pm	-Long term land use and the effects on present ecosystems - Bus tour to Freiburg	-Bus tour to Freiburg
Thu 13.4. 10-11am	-Final exam	-Report
Fri 14.4. No class		

REQUIRED READINGS:

- Ellenberg, H. (2009): Vegetation ecology of Central Europe. Cambrige Univ. Press, 4th ed.:
  - Chapter A1: The vegetation of Central Europe in general (pp 1-13);
  - Chapter A2: The development of the plant cover under the influence of man (pp 14-42);
- Ellenberg, H. (2009): Vegetation ecology of Central Europe. Cambrige Univ. Press, 4th ed.:
  - Chapter B1: General view of the Central European woodlands (pp 43-49);
  - Chapter B5: Tree and shrub vegetation of flood plains and peat lands (pp 243-247,pp 255-256);
  - Chapter C6: The vegetation above the alpine tree line (pp 388-403);
  - Chapter D1: Formations created and maintained largely by man´s activities (pp 467-476, pp 484-490).

- Glatzel, G. (1991): The impact of historic land use and modern forestry on nutrient relations of Central European forest ecosystems. Fertilizer Research, 27, 1-8
- Pro Silva (1999): Brochure “close to nature forest management”. PRO SILVA. European federation of foresters advocating forest management based on natural processes (ed.), 1-12 http://www.prosilvaeurope.org [2]
- Schuhmacher, S., Bugmann, H. (2006): The relative importance of climatic effects, wildfires and management for future forest landscape dynamics in the Swiss Alps. Global Change Biology, 12/8, 1435-1450.
- Spieker,H. (2003): Silvicultural management in maintaining biodiversity and resistance of forests in Europe (temperate zone). Journal of Environmental Management 67, 55-65.
- Schweingruber, F.H. (1996): Treerings and Environment Dendroecology. Verlag Paul Haupt
  - Chapter 9: Growth factors (pp 27-36);
  - Chapter 18: Influence of Man (pp 344, pp 414-420);
  - Chapter 19: Influence of Climate (Dendroclimatology) (pp 440, pp 444-449).

RECOMMENDED READINGS:

- Otti Wilmanns: Können Trockenrasen derzeit trotz Imissionen überleben, English abstract.
- Anstett, M., Bogenrieder A. (2005): Naturforschende Gesellschaft Freiburg 95/2: Dendrologische und ökologische Untersuchungen an Buxus sempervirens im Buchswald bei Grenzach, English abstract.