



ES 300 ECOLOGY AND MANAGEMENT OF FOREST LANDSCAPES IN SOUTHWEST GERMANY AND THE SWISS ALPS
IES Abroad Freiburg

DESCRIPTION: Students will be introduced to the ecology and management of typical forest landscapes in Southwest Germany and the Swiss Alps. Along an elevational gradient, students will study flood plain forests in the Rhine valley, mountain forest ecosystems in the Black Forest and alpine forests in the Swiss Alps. Students will analyze the structure and dynamics of typical forest ecosystems of Central Europe. They will learn to understand that current forest landscapes are a result of the interaction between natural and anthropogenic factors on various scales in time and space. The course includes several one-day excursions, field trainings and a three-day field study trip to the Swiss Alps.

CREDITS: 3

LANGUAGE OF INSTRUCTION: English

PREREQUISITES: Basic knowledge of ecology/natural resource management

METHOD OF PRESENTATION: The course will be a combination of lectures, contributions of students (presentations), discussions and several field study trips.

REQUIRED WORK AND FORM OF ASSESSMENT:

- **Short Presentation** – 20%
- **Field Trip Reports** – 50%
- **Learning Journal** – 20%

LEARNING OUTCOMES:

By the end of the course, students should be able to:

- Utilize methods to analyze the structure and dynamics of forest ecosystems
- Explain historical and current forest management practices in Central Europe
- Interpret current forest landscapes as a result of the interactions between natural and anthropogenic factors
- Assess regional concepts of nature protection and nature reserves
- Evaluate ecological risks and opportunities under changing environmental conditions (*eg., climate change, nitrogen emissions*)
- Communicate the gained knowledge in oral (short presentation, discussions) and written form (*field report, learning journal*)

CONTENT:

Session	Content	
	Morning	Afternoon
1		<u>Reading:</u> • <i>Ellenberg, H. (2009): Chapter A I and Chapter A II</i>
2		<u>Reading:</u> • <i>Pro Silva (1999): Brochure “close to nature forest management</i>
3		<u>Reading:</u> • <i>Spiecker (2003)</i>

4		<p>14:00 h: Welcome and introduction to course resources</p> <p>14:30 h – 17:00 h: Introduction to the (bio)geography of Southwest Germany and assignment of readings and topics for short presentations</p>
5	9:00 h–14:30 h: Field trip to the University Forest: Conversion of conifer monocultures into mixed species forests	
6	Writing reports and learning journal	<p><u>Reading:</u></p> <ul style="list-style-type: none"> • <i>Brang et al. (2006)</i>
7	<p>9:00 h: Introduction to the Ecology and Management of typical mountain forest ecosystems in the Western Black Forest</p> <p>10:00 h: Bus ride to the “Schauinsland” (<i>Departure in front of the Herderbau, Tennenbacherstr. 4</i>)</p> <p>10:30 h - 18:00 h: Hiking tour* through various forest ecosystems along an elevational gradient</p>	
8	<p>9:00 h: Student presentation I (<i>Ellenberg Chapter A II</i>)</p> <p>10:00 h - 12:15 h: Introduction to the ecology and management (EM) of lowland forests in the Upper Rhine Valley</p>	13:30 h – 18:00 h: Field trip* to various riparian ecosystems in the Upper Rhine Valley
9	<p>9:15 h: Student presentation II (<i>Spiecker 2003</i>)</p> <p>10:15 h - 12:15: Current challenges for EM of forests in Central Europe</p>	13:45 – 17:45 h: Field trip* to the ecosystem case study “Conventwald”
10	<p>9:15 h: Introduction to the (bio)geography of the Swiss Alps</p> <p>11:30 h - 12:45 h: student presentation III (<i>Brang et al. 2006</i>)</p>	<p><u>Reading:</u></p> <ul style="list-style-type: none"> • <i>Lindner et al. (2014)</i> • <i>v. Wilpert, K., Zirlewagen D., Kohler, M. (2000)</i>
11	Excursion to the Swiss Alps* (Departure in Freiburg at 7:00 h)	
12	<p>Topics:</p> <ul style="list-style-type: none"> • Dynamics in an alpine virgin forest • Management of alpine protection forests • Nature conservation in Alpine forests and climate change 	
13	More details see in the guide „Excursion to the Swiss Alps“	
14	<p>9:15 h: Student presentation IV (<i>Lindner et al. 2014</i>)</p> <p>10:15 h - 12:45 h: Concluding discussion & course evaluation</p>	Finalizing report and learning journal submission deadline: 16.10.2017

* Make sure to be appropriately equipped for the excursions (e.g., all weather clothing, mountain boots, some food & water). The weather in the mountains of the Black Forest and in the Alps can be very rough and deteriorate quite quickly. The bus departs in front of the “Konzerthaus” (next to Freiburg Central Station).

REQUIRED READINGS:

- **Ellenberg, H. (2009):** Vegetation ecology of Central Europe. Cambridge Univ. Press, 4th ed.:
 - Chapter A I : The vegetation of Central Europe in general (pp1-13);
 - Chapter A II: The development of the plant cover under the influence of man (pp 14-42);

- **Brang, P., Schönenberger, W., Frehner, M., Schwitter, R., Thormann, J. J., Wasser, B. (2006):** *Management of protection forests in the European Alps: an overview. For. Snow Landsc. Res., 80, 23–44.*
- **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>
- **Spiecker, H. (2003):** Silvicultural management in maintaining biodiversity and resistance of forests in Europe (temperate zone). *Journal of Environmental Management* 67, 55–65.
- **Lindner, M., Fitzgerald, J.B., Zimmermann, N.E., Reyer, C., Delzon, S., van der Maaten, E., Schelhaas, M-J., Lasch, P., Eggers, J., van der Maaten-Theunissen, M., Suckow, F., Psomas, A., Poulter, B., Hanewinkel, M. (2014):** Climate Change and European Forests: What do we know, what are the uncertainties, and what are the implications for forest management? *Journal of Environmental Management* 146: 69-83.
- **V. Wilpert, K., Zirlewagen D., Kohler, M. (2000):** To what extent can silviculture enhance sustainability of forest sites under the emission regime in Central Europe? *Water, Air and Soil Pollution. Vol 122/1-2, 105-120.*

RECOMMENDED READINGS:

- **Ellenberg, H. (2009):** *Vegetation ecology of Central Europe.* Cambridge Univ. Press, 4th ed.:
 - Chapter B I: General view of the Central European woodlands (pp 43-70);
 - Chapter B II: Beech and mixed Beech woods (pp 71-138);
 - Chapter B III: Other deciduous woodland excluding flood plains and mires (pp 139- 190);
 - Chapter B V: Tree and shrub vegetation of flood plains and peat lands (pp 243-282);
- **Spiecker, H., Hansen, J., Klimo, E., Skovsgaard, J. P., Sterba, H., v. Teuffel, K. (2004):** Norway spruce conversion – Options and consequences. *EFI Research Report 18.*
- **Pommering A., Murphy, S. T. (2004):** A review of the history, definitions and methods of continuous cover forestry with special attention to afforestation and restocking. *Forestry, 77/1, 29-43.*
- **Schumacher, 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.*