

Subject name	Forest Protection	
Subject code	E.1.FORP.SC.ECTIE.L	
Faculty	Faculty of Forestry	
Institute	Institute of Forest Ecosystem Protection	
Department	Department of Forest Protection, Entomology and Forest Climatology	
Subject supervisor/Lecturer	Dr. eng. Bartłomiej Bednarz	
General information	Course duration	One semester
	ECTS credit	5
	Lectures total	4 hrs
	Classes	15 hrs
	Field training	16 hrs
	Teaching period	winter and summer semester
Objective and general description	<p>The main objective of the course is to introduce participants to the problems of biotic, abiotic and anthropogenic risk factors occurred in Polish forest. Students will learn both the scientific basis, and applications of forest protection practices in different forests types endangered by harmful factors. After studying fundamental concepts students will learn more detailed the methods to recognize, predict, monitor and control of the main pest insects species, most occurred in managed forests. Furthermore the methods of trees and forest protection practices used in managed and partly protected forest areas will be also discussed. The aim of the field workshop is to get the knowledge directly form experienced forest rangers and become familiar with Polish State Forest management, organization structure with special emphasis on methods of sustainable forest management and protection. The course participants will learn in reality, based on the specific example the methods how to recognize and classify the threat degrees to forests due to presence of industrial air pollution. The field workshop will include also the practice to recognize different harmful factors may occur in different stages of stand development. The knowledge how to predict the outbreak risk of main pholiophagous pest insects species and increase ecosystem resistance to biotic harmful factors with application of biological methods protection will be the additional skills of participants gained at the course.</p>	
Lectures (2 * 2 hrs)	<ol style="list-style-type: none"> 1. Introduction to forest protection in Poland 2. Basic problems of forest risks 3. The consequences of industrial anthropopression in forest areas 4. Biotic, abiotic and anthropogenic risk factors assessment and strategies of prevention 5. Methods in forest protection of managed and partly protected areas 	
Classes and consultation (7,5*2 hrs)	Forest protection methods – case study (project prepared by students)	
Field training (16 hrs) -2 days	<p>To be carried out in selected forest districts and will be focused on:</p> <ol style="list-style-type: none"> 1. <i>Methods of forest protection in practice</i> 2. <i>Recognize and classify the threat degrees to forests due to presence of industrial air pollution</i> 3. <i>Practices to identify different harmful factors occurred in different stages of stand development as exemplified by selected case study</i> 4. <i>Prediction methods of main pholiophagous pest insects species outbreak risk on example of pine forest and the way to increase ecosystem resistance to harmful factors with special emphasis on biological method protection.</i> 	

<p>Literature</p>	<p>Ayres, M. P., & Lombardero, M. J. (2000). Assessing the consequences of global change for forest disturbance from herbivores and pathogens. <i>Science of the Total Environment</i>, 262, 263–286.</p> <p>Borecki, T., & Keczyński, A. (1992). Atlas loss of assimilatory apparatus of forest trees. Agencja Reklamowa “ATUT”, Warszawa.</p> <p>Dominik J., 1977. Forest protection. PWRiL, Warszawa.</p> <p>Hanisch, B., Kilz, E. (1990). Monitoring of forest damage: spruce and pine. <i>Waldschäden erkennen: Fichte und Kiefer. Reconnaître les dommages forestiers: épicéa et pin.</i> Stuttgart: Verlag Eugen Ulmer.</p> <p>Haze M., (red.). 2012. Fire protection regulations. Centrum Informacyjne Lasów Państwowych, Warszawa.</p> <p>Kolk A., 2004. Forest protection regulations. Centrum Informacyjne Lasów Państwowych, Warszawa.</p> <p>Kolk, A., Starzyk, J. (1996). Atlas of harmful forest insects. Mulico Oficyna Wydawnicza, Warszawa.</p> <p>Łęski O. (red.) 2001. Forest protection handbook. Wydawnictwo Świat, Warszawa.</p> <p>Menéndez, R. (2007). How are insects responding to global warming? <i>Tijdschrift Voor Entomologie</i>, 150(December), 355–365.</p> <p>Michel, A., Seidling, W. (2016). Forest Condition in Europe. 2016 Technical Report of ICP Forests. Report under the UNECE Convention on Long-Range Transboundary Air Pollution (CLRTAP). BFWDokumentation 23/2016. Vienna: BFW Austrian Research Centre for Forests.</p> <p>Moore, B., Allard, G. (2008). Climate change impacts on forest health. Rome – Italy: Forest Department Food and Agriculture Organisation of the United Nations. FAO.</p> <p>Müller, E., & Stierlin, H. R. (1990). <i>Sanasilva. Tree Crown Photos.</i> 2nd Revised and extended Edition. Swiss Federal Institute for Forest, Snow and Landscape Research, Switzerland.</p> <p>Schwerdtfeger F., 1970. <i>Die Waldkrankheiten: Ein Lehrbuch der Forstpathologie und des Forstschutzes.</i> Parey, Hamburg, Berlin, 509 pp.</p> <p>Szukiel E., 2001. Trees protection against herbivorous mammals. Centrum Informacyjne Lasów Państwowych, Warszawa.</p>
--------------------------	--