Subject name	Biometry and Forest Productivity	
Subject code		
Department	Department of Biometry and Forest Productivity Institute of Forest Resources Management	
Faculty	Faculty of Forestry	
Subject supervisor/Lecturer	Jarosław Socha, Ph.D. Professor at Department of Biometry and Forest Productivity rlsocha@cyf-kr.edu.pl Phone: +48 126625011, Personal webpage; Google Scholar Profile;	
General information	Teaching period	Summer semester
	ECTS credit	3
	Lectures total	12
	Classes	14
	Field training	8
Objective and general description	This is a course concerning general rules and factors affecting forest productivity. Relationships and models of tree and stand growth are introduced. The course objective is to learn on forest dynamics, growth and yield and integration of forest site productivity with biometry and tree species autecology.	
Lectures **6 × 2 hours**	1. Tree form and stem taper modeling. Tree-stem volume equations. Stem profile models and its use for determination of tree stem volume. Tree weight and biomass estimation. Forest Biomass - models for biomass estimation. 2. Forest site evaluation. Actual and potential site productivity. Phytocentric measures of site quality. Geocentric measures of site productivity. Factors affecting site productivity. 3. Growth relationship and their biometric formulation. Growth functions. Quantifying stand density. Tree competition indices. 4. Stand structure and its biometrical description. Effect of species mixture on stand growth. 5. Growth models of trees and stands. Forest dynamics and ecological basis for development of forest growth models (processes in stand, stand density and its effect on forest growth). Tree-level models. 6. Forest productivity in an era climate change. Process based models. Diagnosis of growth disturbances. Causes and consequences of accelerating tree growth.	
Classes × 2 hours	1-2. Developing biomass and volume equations 3-4. Taper models and its use for determination of tree stem profile and tree volume. 5-6. Site index models and its use for determination of potential site productivity. 7. Demonstration of ability for practical use of growth models.	
Field training **One day – 8 hours**	Practical description of selected stand biometrical characteristics and assessment of productivity in selected stands.	
Literature	Burkhart, H.E., Tomé, M., 2012. Modeling Forest Trees and Stands. Springer-Verlag, Dordrecht, Heidelberg, New York, London.	

	Pretzsch, H., 2010. Forest Dynamics, Growth and Yield, Springer. Weiskittel, A.R., Hann, D.W., Kershaw Jr., J.A., Vanclay, J.K., 2011. Forest Growth and Yield Modeling, 2011.
Assessment method	Classes – demonstration of ability for practical problem solving; field training – demonstration of ability for practical description stand biometric characteristics and productivity assessment, report; lectures – test.