

Course name	Plant Genomics	
Course code	E.1.PCXX.SC.ECTIE.O	
Department	Department of Genetics, Plant Breeding and Seed Science	
Faculty	Faculty of Biotechnology and Horticulture	
Course supervisor/Lecturer	Dr. hab. Dariusz Grzebelus, prof. UR	
General information	Teaching period	1 semester / winter or summer semester
	ECTS credit	6
	Lectures total	21 h
	Lab classes	9 h
Objective and general description	Structure and function of plant genomes, <i>Arabidopsis thaliana</i> as a model plant genome, experimental methods of genome analysis, genome evolution, comparative genomics, practical applications of plant genomics	
Lectures 7 x 3 hours	<ol style="list-style-type: none"> 1. Introduction – definition and history of genomics, structural, functional, and comparative genomics, genetic mapping of plant genomes 2. Whole genome sequencing – methods and perspectives. 3. Structure of plant genomes 4. Repetitive DNA – origin and function 5. Mechanisms of genome evolution, comparative genomics 6. Functional genomics, methods for global transcriptome analysis 7. Genomics-assisted crop improvement 	
Lab classes 3 x 3 hours	<ol style="list-style-type: none"> 1. Exploration of DNA and protein sequence databases 2. <i>In silico</i> analysis of DNA sequences 3. Sequence alignment and similarity 	
Literature	<p>Lankenau D-H, Volff J-N (eds.), 2009. Transposons and the Dynamic Genome. Springer, Dordrecht.</p> <p>Meksem K, Kahl G (eds.), 2005. The Handbook of Plant Genome Mapping. Wiley-VCH, Weinheim.</p> <p>Sensen CW (ed.), 2005. Handbook of Genome Research. Wiley-VCH, Weinheim, vol. 1 and 2.</p> <p>The Arabidopsis Genome Initiative, 2000. Analysis of the genome sequence of the flowering plant <i>Arabidopsis thaliana</i>. Nature 408: 796-815.</p> <p>Varshney RK, Tuberosa R (eds.), 2007. Genomics-Assisted Crop Improvement. Springer, Dordrecht, vol. 1 and 2.</p>	