

1. Title of subject/module/unit		Principles of Plant Cell and Tissue Cultures				
2. Unit code		3. Number of ECTS credits			5	
4. Contact hours		Total	L	E	S	Other forms
		18	20	2		
5. Cycle	Master's	6. Year	1st		7. Semester	1st
8. Study programme		International Master of Science in Horticulture		9. Branch of study		
10. Pillar of the programme		Optional		11. Language	English	
12. Special features						
13. Objectives and subject-specific competences		To impart knowledge to the students on the various techniques of plant tissue cultures and their role in crop improvement. Valuable hands-on training to those interested in careers in plant breeding and biotechnology.				
14. Description of content		Major concepts and importance of plant tissue cultures, plant hormones, in vitro pollination and fertilization, micropropagation and somatic embryogenesis, haploid production, meristem culture and pathogen-free plants, interspecific crossing and embryo-rescue, somatic hybridization, in vitro selection and somaclonal variation				
15. Basic bibliography		<ol style="list-style-type: none"> 1. Sathyannarayana B. N. 2007. Plant Tissue Culture: Practices and New Experimental Protocols I. K. International Pvt Ltd 2. Plant Propagation by Tissue Culture. 2008. Edited by Edwin F. George, Michael A. Hall, Geert-Jan De Klerk. Springer 3. Plant Cell Culture. Essential Methods. 2010. Ed. Davey M.R., Anthony P. Willey-Blackwell,. 4. Experiments in Plant tissue culture. 1985. Secon Edition. Ed. Dodds, J.H., Roberts L.E. Cambridge University Press 5. Plant Embryo Culture. Methods and Protocols. 2011. Thorpe T.A., Yeung E.C. Humana Press 				
16. Envisaged learning outcomes		<i>16.1 Knowledge and understanding</i>		The student explains the nature of plant growth processes, which are relevant to tissue culture. Differentiate between different types of plant tissue cultures. Understand the management of environmental control in tissue culture.		

	<i>16.2 Application</i>	The student is able to use the tissue culture lab equipment. Prepares growing media. Applies appropriate tissue culture methods and procedures for different purposes and determinates commercial applications for tissue culture. Interprets and reports obtained results.
	<i>16.3 Reflection</i>	The student expresses unbiasedopinions on the role of the tissue cultures in crop improvement.
	<i>16.4 Transferable skills – not tied to just one subject</i>	Teamwork
17. Methods of teaching and learning	Lectures, laboratory practicals and seminars.	
18. Conditions for inclusion or to undertake work required	Enrolment in the year of the course. Pre-requisite is a basic course in biology.	
19. Methods of assessment and the assessment scale	- Written exam (70%) - Attendance at laboratory practicals (30%) Evaluation scale: Grades from 2.0 (worst) to 5.0 (best)	
20. Method of evaluation of course quality	Student questionnaire.	
21. Curriculum compiler	Dr. Agnieszka Kielkowska, University of Agriculture in Krakow Dr. AlicjaChuda, University of Agriculture in Krakow	