Univerza v Mariboru

Fakulteta za naravoslovje
in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS	
Predmet:	**Izbrana poglavja iz rastlinskih tkivnih kultur**
Course title:	Selected Topics from Plant Tissue Cultures

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Doktorski študij Ekološke znanosti, 3. stopnja		**1. ali 2.; 1st or 2nd**	**1.- 4.; 1st-4th**
Doctoral Study Ecological Sciences, 3rd degree			

Vrsta predmeta / Course type	Izbirni/Elective
Univerzitetna koda predmeta / University course code:	

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Lab. vaje Laboratory work	Terenske vaje Field work	Samost. delo Individ. work	ECTS
15	**15**	**-**	**-**	**-**	**150**	**6**

Nosilec predmeta / Lecturer:	Jana AMBROŽIČ-DOLINŠEK

Jeziki / Languages:	**Predavanja / Lectures:**	slovenski / Slovene
	Vaje / Tutorial:	slovenski / Slovene

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:	**Prerequisits:**
Poznavanje botanike in fiziologije rastlin na ravni dodiplomskega programa prve stopnje ter ekofiziologije rastlin na ravni magistrskega programa druge stopnje.	Knowledge of botany and plant physiology at graduate level and plant ecophysiology at master level.

Vsebina: **Content (Syllabus outline):**

Obravnavana so izbrana poglavja iz naslednjih sklopov: Načini in uporaba rastlinskih tkivnih kultur v znanosti in v tržne namene ter biologija gojenja rastlinskih celic. Predmet v prvem delu obravnava tehnične pogoje za vzgojo rastlinskih tkivnih kultur. V drugem delu obravnava različne možnosti uporabe rastlinskih tkivnih kultur: mikropropagacije, somatske embriogeneze, eliminacija virosov, krioprezervacijo ter pridobivanje sekundarnih metabolitov.	Selected topics in the following chapters are discussed: Principles and application of plant tissue culture in research and in commercial production and the biology of plant cell cultures. The course in the first part introduces technical requirements for plant tissue cultures. In the second part present different applications of plant tissue cultures: micropropagation, somatic embryogenesis, virus elimination, criopreservation, and secondary metabolites production.

Temeljni literatura in viri / Readings:

Bohanec B. (1992) Tehnike rastlinskih tkivnih kultur. Biotehniška fakulteta, Ljubljana.
Pierik R.L.M. (1997) In vitro culture of higher plants. Kluwer Academic Publishers. Dordrecht.
Raspor, P. (ur.). (1996) Biotehnologija, Osnovna znanja. BIA, Ljubljana
Thomas B. (ur.). (2003) Encycopledia of applied plant sciences. Elsevier, Academic press, Amsterdam.
Chawla H.S. (2009) Introduction To Plant Biotechnology. Oxford & IBH Publishing Company Pvt. Limited
Chawla H.S. (2003) Plant biotechnology: practical approach. Science Publishers, Enfield.
George E.F. (1993) Plant propagation by tissue culture: Part 1: The technology, Part 2: In practice. Exegenetics Limited, Edington.
George E. F., Hall M. A. in De Klerk, G.J. (Eds.) (2008) Plant Propagation by Tissue Culture. Vol 1 and Vol 2. Exegetics, Basingstoke, UK
Trigiano R.N. in Gray D.J. (2011) Plant tissue culture concepts and laboratory. CRC Press, Boca Raton.
Kleyn J., Scoggins H. in Bridgen M. (2013) Plants from Test Tubes: An Introduction to Micropropogation. Timber Press
Izbrani članki iz znanstvenih revij.

Cilji in kompetence:	**Objectives and competences:**
• Razumeti tehnične zahteve vzgoje rastlin v tkivni kulturi. • Razumeti lastnosti aseptičnega dela. Pregled različnih načinov uporabe rastlinskih tkivnih kultur v znanosti in v komercialne namene.	• Understand the technical requirements of tissue culture cultivation. • Understand the nature of aseptic work. • To give an overview through the different ways of using plant tissue culture in research and commercial production.

Predvideni študijski rezultati:	Intended learning outcomes:
Znanje in razumevanje: - Tehnične zahteve vzgoje rastlin v tkivni kulturi. - Priprava vcepkov in gojišč. - Rastlinski hormoni. - Organogeneza, embriogeneza. - Značilnosti gojenja rastlin v tkivni kulturi. - Različni tipi tkivnih kultur. - Pridobivanje sekundarnih metabolitov. - Krioprezervacija. **Prenesljive/ključne spretnosti in drugi atributi:** - Izbrati ustrezno gojišče, metodo mikropropagacije in ex situ strategijo varstva za rastlinsko vrsto. - Seznanjanje z izbranimi laboratorijskimi metodami dela.	**Knowledge and understanding:** - Technical requirements of tissue culture cultivation. - Tissue and media preparation. - Plant hormones. - Organogenesis, embryogenesis. - Tissue culture cultivation features. - Different tissue culture types. - Secondary metabolites production. - Cryopresevation. **Transferable/Key Skills and other attributes:** - Determine appropriate growth medium, micropropagation procedure and strategy for ex situ conservation for plant species. - Qualification for work with selected laboratory methods.
Metode poučevanja in učenja:	**Learning and teaching methods:**
Predavanja s študijami primerov Seminar	Lectures with case studies Seminar

Načini ocenjevanja:	Delež (v %) / Weight (in %)	Assessment:
Izpit Seminarska naloga s predstavitvijo in zagovorom	50 50	Exam Seminar work with presentation and defence

Reference nosilca / Lecturer's references:

AMBROŽIČ-DOLINŠEK, Jana, CIRINGER, Terezija, KALIGARIČ, Mitja. Micropropagation of the narrow endemic Hladnikia pastinacifolia (Apiaceae). *Acta botanica Croatica*, ISSN 0365-0588, 2016, vol. 75, iss. 2, str. 244-252, ilustr., doi: 10.1515/botcro-2016-0028. [COBISS.SI-ID 22339592], [JCR, SNIP, WoS do 4. 11. 2016: št. citatov (TC): 0, čistih citatov (CI): 0, Scopus do 30. 11. 2016: št. citatov (TC): 0, čistih citatov (CI): 0]

MECHORA, Špela, ŽERDONER ČALASAN, Anže, FELICIJAN, Mateja, URBANEK KRAJNC, Andreja, AMBROŽIČ-DOLINŠEK, Jana. The impact of selenium treatment on some physiological and antioxidant properties of Apium repens. *Aquatic botany*, ISSN 0304-3770. [Print ed.], 2016, 1-8, doi: 10.1016/j.aquabot.2016.12.002. [COBISS.SI-ID 22874888], [JCR, SNIP, Scopus do 27. 1. 2017: št. citatov (TC): 0, čistih citatov (CI): 0]

MECHORA, Špela, SOTLER, Metka, URBANEK KRAJNC, Andreja, AMBROŽIČ-DOLINŠEK, Jana. How selenium affects Berula erecta. *Water, air and soil pollution*, ISSN 0049-6979. [Print ed.], 2016, vol. 227, iss. 12, str. 1-12, doi: 10.1007/s11270-016-3150-2. [COBISS.SI-ID 22790408], [JCR, SNIP, WoS do 20. 1. 2017: št. citatov (TC): 0, čistih citatov (CI): 0, Scopus do 3. 12. 2016: št. citatov (TC): 0, čistih citatov (CI): 0]