

## COURSE DESCRIPTION

Course code	Volume in ECTS credits	Institution	Faculty	Department
MIS8022	7	ŽŪA VDU	MEF	AEI

### Course title in Lithuanian

Invazijų ekologija

### Course title in English

Invasions Ecology

Study methods	Volume in ECTS credits
Lectures	1
Consultations	4
Seminars	1
Individual work	1

### Short course annotation in Lithuanian (up to 500 characters)

Strateginis globalių antropogeninių ir klimato kaitos poveikio sukkelto rūšių invazijos žalos ekologinis ir ekonominis vertinimas; invazijų teorijos; rūšių invazijos problemų ekosistemose sprendimas, ekosistemų būklės vertinimas pagal svetimžemių rūšių poveikį; invazinių rūšių poveikio bioįvairovei ir ekosistemų funkcionavimui vertinimas ir valdymas stabilizuojant ekosistemų bioįvairovę; sisteminių ir fundamentalių žinių apie invazinių rūšių plitimą, žalą bioįvairovei ir ekosistemoms; kompetencijos naujų ekologinių idėjų ir technologijų kūrimui ir vystymui

### Short course annotation in English (up to 500 characters)

Strategic and economic assessment of the damage caused by global anthropogenic and climate change-induced invasions; theories of invasions; solving of species invasion problems in ecosystems, assessment of ecosystem status by alien species; assessing and managing the impact of invasive species on biodiversity and ecosystem functioning by stabilizing biodiversity in ecosystems; systemic and fundamental knowledge about the spread of invasive species, damage to biodiversity and ecosystems; competences for the development of new eco-ideas and technologies

### Relevance of the course

Invasions ecology is relevant for PhD students in the field of Environment and Ecology to achieve their deeper competences and knowledge about ecosystems and their formation.

### Course aims

Assessing the importance of species invasion phenomena for biodiversity of native species and ecosystems in a globally changing biosphere of the Earth, based on new fundamental knowledge; to identify causes, conditions and levels of species migration in different ecosystems; to assess the impact of various environmental factors on species invasion and ecosystem stability; to assess the influence of anthropogenic factors on biodiversity of alien species migration and local, natural, semi-natural and anthropogenic ecosystems; to adapt ecosystem knowledge for species invasion management; biological, ecological and economic assessment of the impact of alien species in order to preserve the biodiversity of ecosystems.

### Content (topics) and methods

Reasons, effects, consequences and response of biological invasion. Coexistence of species. Alien species - landscape weeds. The significance of specific ecological conditions for coexistence of herbaceous and wood species. Models describing species diversity. Quantitative indicators of the control mechanisms regulating species diversity in communities. The connection of spatial environment with the coexistence of species. The relationship of species coexistence with the duration of environmental change. Classification systems of invasive species. The most important barriers of biological invasion. Naturalization and establishing levels of alien species.

Geographical-historical classification of invasive species. Division of anthropophytes by biotopes and naturalization level. Types of naturalized aliens. The direct economic impact of invasions. The impact of invasive species and problems caused by various sectors of practical human activity; the contribution of anthropogenic activities to the diversity and spread of alien species; ecology and control of introduced species. Invasive species regulation. International species invasion regulatory organizations. Regulation of international conventions, treaties, directives and codes. Regional and national regulation. Invasive and harmful databases. Involving the public in the management of invasive species. Invasive species in Europe. Alien species in Lithuania.

-Lectures, consultations, discussions during lectures, individual work  
- consultations (lectures can be read in case of sufficient number of PhD students)

#### **Structure of cumulative score and value of its constituent parts**

A ten-point scale and cumulative scoring scheme are applied. Self-study assignments (report on selected topic) are graded, final assessment is determined by examinations, multiplication of intermediate evaluations by weighting and product summing.

#### **Compulsory reference materials**

<b>No.</b>	<b>Authors of publication, title, publishing house, year of publication.</b>
1.	Pimentel D. 2011. Biological Invasions. Economic and Environmental Costs of Alien Plant, Animal, and Microbe Species. 2nd ed., CRC Press, Taylor & Francis Group. 446.
2.	Cronk Q.C.B., Fuller J.L. (2001) Plant invaders: the threat to natural ecosystems. Island Press, Washington DC
3.	Davis M. A. Invasion biology. Oxford University Press, Oxford, 2009, 244 p.
4.	Handbook of Alien Species in Europe. Ed. J. A. Drake. 2009 Springer Science + Business Media B.V.
5.	McNeeley J. A., Mooney H. A., Neville L. E., Schei P. and Waage J. K. A Global Strategy on Invasive Alien Species, IUCN, Gland, Switzerland, 2001.
6.	Weber E (2003) Invasive plant species of the world: a reference guide to environmental weeds. CABI, Cambridge

#### **Supplementary reference materials**

<b>No.</b>	<b>Authors of publication, title, publishing house, year of publication.</b>
1.	Colonisation, Succession and Stability. M. J. Crawley, P. J. Edwards and A. J. Gray (eds), Blackwell Scientific Publications, Oxford, 1987, 429.
2.	Invasive Species and Biodiversity Management, O. T. Sandlund, P. J. Schei, A. Viken (eds), Kluwer Academic Publishers, Dordrecht, 1999, 79.
3.	Clutton-Brock J. A Natural History of Domesticated Mammals, Cambridge University Press, Cambridge, 1999.
4.	Radosevich, S. R. , Holt, J. S., Ghersa, C. M. Ecology of weeds and invasive plants : relationship to agriculture and natural resource management. 3rd ed. Hoboken [N.J.] : John Wiley & Sons, 2007.
5.	Heywood V. Global Biodiversity Assessment, Cambridge University Press, Cambridge, 1995

#### **Course programme designed by**

<b>No.</b>	<b>Name, surname</b>	<b>Institution</b>	<b>Degree</b>	<b>E-mail address</b>
1.	Ligita Baležentienė	ŽŪA VDU	dr.	ligita.balezentiene@vdu.lt