

COURSE DESCRIPTION

Course code	Volume in ECTS credits	Institution	Faculty	Department
MIS8003	8	VDU ŽŪA	Forest sciences and ecology	Environment and ecology

Course title in Lithuanian

Miško fitocenozijų tyrimo ir statistinės analizės metodai

Course title in English

Methods of research and statistical analyses of forest phythoseonoses

Study methods	Volume in ECTS credits
Lectures	2
Consultations	1
Seminars	2
Individual work	3

Short course annotation in Lithuanian (up to 500 characters)

Dalyko tikslas suteikti doktorantams žinių apie fitocenologinių tyrimų etapus ir terminologiją, duomenų tipus, rezultatų interpretavimo ypatumus ir galimas klaidas; regresinę analizę ir taikomus modelius, ordinavimo klasterinės analizės metodus; gebėjimų parinkti reikiamo tipo metodus, parengti tyrimo planą, pritaikyti regresijos, ordinavimo bei klasterinės analizės metodus fitocenologiniuose tyrimuose, interpretuoti gautus analizės rezultatus.

Short course annotation in English (up to 500 characters)

The aim of the subject is to provide the doctoral students with knowledge of terminology and phytocenological research stages, data types, interpretation of results and possible errors; regression analysis and applied models, methods of ordination, cluster analysis; abilities to select the required type of methods, to prepare a research plan, to apply regression, ordination and cluster analysis methods in phytocenological studies, to interpret the obtained results.

Relevance of the course

Knowledge of terminology and phytocenological research stages, data types, interpretation of results and possible errors; regression analysis and applied models, methods of ordination, cluster analysis; abilities to select the required type of methods, to prepare a research plan, to apply regression, ordination and cluster analysis methods in phytocenological studies, to interpret the obtained results.

Course aims

To provide the PhD student with knowledge of phytocenological research and analysis methods, ability to analyze phytocenological research data, to apply mathematical analysis methods, to select and apply them in case of specific research.

Content (topics) and methods

Introduction: types of phytocenological investigations, stages, application and terminology (*lectures, exercises, individual assignment*).

Data collection and analysis: Data collection objectives, data collection planning, data transformations: measurement scales, transformation, interpretation of results, interpretation mistakes, complexity of phytocenotic investigations (*lectures, exercises, individual assignment*).

Applications of regression in phytocenology: applied models and types of variables, regression methods using quantitative data, regression methods using qualitative data, application of multivariate regression in phytocenology, application of regression using indicative values of species (*lectures, exercises, individual task*).

Methods of ordination in phytocenology: ordination models and methods, correspondence analysis (CA), detrended correspondent analysis (DCA), principal component analysis (PCA), use of external data for ordination, result interpretation, canonical analysis (CA), multivariate analysis, presentation of results (*lectures, exercise, individual assignment*).

Cluster analysis in phytocenology: types of cluster analysis, agglomerative methods, dividing

methods, TWINSpan, non-hierarchical gradient methods, interpretation of cluster analysis, presentation of cluster analysis results (*lectures, exercises, individual assignment*).

Structure of cumulative score and value of its constituent parts

Individual assignment 50%; Exams - 50 %

Compulsory reference materials

No.	Authors of publication, title, publishing house, year of publication.
1.	Jongman R. H., Braak C. J. F. Ter, Tongeren O. F. R. Van. 1995. Data analysis in community and landscape ecology - Pudoc Wageningen
2.	Kent M., 2011: Vegetation description and analysis: a practical approach. Wiley-Blackwell, 428p.
3.	Lepš J., Šmileuer P. 2003. Multivariate Analyses of ecological data using CANOCO. Cambridge, 282 p.
4.	Maarel Eddy. 2004. Vegetation ecology, 408p.
5.	Wildi O. 2013. Data Analysis in Vegetation Ecology - Wiley-Blackwell, 320 p.

Supplementary reference materials

No.	Authors of publication, title, publishing house, year of publication.
1.	Braak C. J. F., Šmileuer P. 2012. CANOCO 5 Wageningen, Česke Budejovice, 496 p.
2.	Fowler J., Cohen L., Jarvis, P. 1998. Practical statistics for field biology, 259p.
3.	Natkevičaitė-Ivanauskienė M., 1983. Botaninė geografija ir fitocenologijos pagrindai - Vilnius.
4.	Ženiauskas K., Songailienė A., 1989. Duomenų biometrinis vertinimas - Vilnius
5.	Mokslinės duomenų bazės – ScienceDirect; Agricola
6.	Tarptautiniai moksliniai žurnalai – Environmental Pollution, Journal of vegetation science, Applied vegetation science, Forest ecology and management, Ecological modeling
7.	Lietuvos moksliniai žurnalai – Ekologija, Botanica Lithuanica, Miškininkystė.

Course programme designed by

No.	Name, surname	Institution	Degree	E-mail address
1.	Vitas Marozas	VDU ŽŪA	Professor, dr.	vitas.marozas@vdu.lt
2.				