RTU Course "Geographic Information Systems"

11509 Vides aizsardzības un siltuma sistēmu katedra

General data

Code	EAS710
Course title	Geographic Information Systems
Course status in the programme	Compulsory/Courses of Limited Choice
Course level	Post-graduate Studies
Course type	Academic
Field of study	Environmental Engineering and Management
Responsible instructor	Marika Rošā
Academic staff	Dzintars Jaunzems
Volume of the course: parts and credits points	1 part, 3.0 Credit Points, 4.5 ECTS credits
Language of instruction	LV, EN
Possibility of distance learning	Not planned
Abstract	The „Geographic Information System" course is related to the theoretical and practical use of geographic information systems. GIS is used as a decision-making technology in process of solving environmental engineering related problems.
Goals and objectives of the course in terms of competences and skills	To acquire theoretical and practical knowledge of geographic information systems, in addition to gain experience working with various GIS and databases (incl. program ArcView), visualization, data processing and presentation functions. To understand the possibilities of GIS and able to use them as decision-making technology to solve environmental engineering-related problems.
Structure and tasks of independent studies	Literature research on the different geographic information systems, their types and usage possibilities. Evoluate modeling and functions of GIS.
Recommended literature	1. E.Stūrmanis. Ģeoinformācijas sistēmas, RTU/LLU, 2005. 2. R. Tomlinson. Thinking About GIS: Geographic Information System Planning for Managers , Revised Edition, ESRI Press. ISBN: 1-58948-119-4, 2005. 3. P.A. Longley at al. Geographic Information Systems and Science , 2nd Edition, John Wiley and Sons, Ltd., New York, 2005.
Course prerequisites	Skills in using computer software

Course outline

Theme	Hours
Definition and nature of GIS	6
Methods and models of GIS	6
Databases and modeling of GIS with the program ArcView	12
Visualization, processing and presentation functions of GIS	14
Use of GIS in environmental engineering	10

Learning outcomes and assessment

Learning outcomes	Assessment methods
To be able to evaluate different methods and models of GIS, and to be able to understand how GIS is designed and operates.	Examination: exam. Assessment criteria: Able to to determine the most appropriate GIS method or model to the real situation.
To be able to work with GIS databases and perform a variety of modeling the complexity of the situation (incl. develope macro models and conduct a sensitivity analysis).	Examination: exam. Assessment criteria: able to make optimum use of available GIS data bases and make the necessary situation modeling.
To be able to use program ArcView in GIS modeling.	Examination: exam. Assessment criteria: Able to fully use and apply program ArcView in GIS modeling.
To be able to use available GIS visualization, data processing and presentation functions as well as to evaluate the results.	Examination: exam. Assessment criteria: able to take full advantage of GIS visualization, data processing and presentation functions.
To be able to apply GIS in environmental engineering (eg., determining availability of resources, forecasting the amount of energy available for future, etc.) and to solve specific tasks.	Examination: exam. Assessment criteria: able to take full advantage of all the GIS for environmental engineering.

Study subject structure

Part	CP	ECTS	Hours per Week			Tests		
			Lectures	Practical	Lab.	Test	Exam	Work
1.	3.0	4.5	2.0	1.0	0.0		*	