KLAIPĖDA STATE UNIVERSITY OF APPLIED SCIENCES

Faculty of Technologies

STUDY PROGRAMME: **GEODESY**
NAME OF THE SUBJECT: **GEOREFERENCE DATABASES**
CODE OF THE SUBJECT: **TF-G-2-035**

Group of the subject*	Type of the subject**	Form of studies	Structure***				Total number of hours	Number of credits
			T	**P**	**C**	**I**		
SF	P	Full-time studies (FT)	20	64	6	70	160	6
		Part-time studies (PT)	10	26	54	70		

*Group of the subject: GS ─ general study subjects; SF ─ subjects of the study field.

**Type of the subject: C ─ compulsory subject; A ─ optional subject (alternative), FE ─ freely elective subject.

***Structure: T ─ theory; P ─ seminars, workshops, laboratory works; C ─ consultations; I ─ individual work.

Annotation

The subject provides knowledge about the concept and use of georeference data, supporting spatial data sets, image maps and georeference data, analyses components of georeference base and practical application of spatial data processing; assesses development of georeference base, creates, designs and updates thematic spatial data sets.

The connection of results of the study programme with results of the study subject and study methods, as well as evaluation methods of the learning achievements

Results of the study programme	Results of the study subject	Study methods	Evaluation methods of the learning achievements
A2. A student will demonstrate knowledge and understanding about the measuring, design and construction methods and ways, technical measures used to take such actions, as well as their management methods and principles of quality assurance	A2.1. A student will be able to create thematic vectorial spatial data set and to convert raster view of digital image map into vectorial view.	Analysis of methodological material, practical work, individual tasks and data digitalisation	Presentation of practical work.
B1. A student is able to apply the acquired knowledge to implement the latest technologies and to solve the tasks, related to geodesy, cartography and cadastre and register of real estate, as well as territorial planning; a student is also able to select measurement methods to obtain the necessary data	B1.1. A student will be able to analyse measurements of spatial data and to process them by using software	Lecture, analysis and demonstration	Interview in writing
B2. A student is able to use modern measurement devices, organise and analyse measurement results optimally, as well as applies methods of administration, formation and assessment of real estate, which comply with standards and regulations of Lithuania and the	B2.1. A student will be able to depict spatial data in cartographic view by using a unified system B2.2. A student will be able to update contents of the spatial data sets according to the latest cartographic material by using software editing errors, and to correct	Analysis of methodological material and individual tasks Collection of information of individual task and its analysis, establishment of skills by working with software	Assessment of an individual task Verbal interview

European Union	editing errors.		
C2. A student is able to apply measurement information for scientific research and to solve other applicable tasks, to design various types of maps, measurement databases of information systems, and to apply legislation in the professional activities	C2.1. A student will be able to enter vectorial data and their attributes; to edit various input errors. C2.2. A student will be able to analyse ORT10LT and to learn reading them; to analyse and to learn using GDR10LT, GDR50LT, GDR200-GDR250LT; to analyse databases of cadastre of real estate; to analyse PLBDR.	Analysis of methodological material, analysis of "InGIS" specification and practical work Lecture and individual work	Presentation of practical work. Presentation of an individual work
C4. A student is able to use basic software, to apply and use numerical computed methods, used to solve specific engineering problems, to use computers to obtain and process problem solving data, to manage processes, automated design and computer graphics	C4.1. A student will be able to analyse opportunities of software put on the market in the field of creation of spatial data sets and to apply some of them in practice. C4.2. A student will be able to create attribute tables by *Excel* software; to import attribute tables into the software environment; to connect attribute tables by using merging or an interface.	Presentation of theoretical material, discussion and individual work Individual tasks and knowledge of software functions	Presentation of an individual work Presentation of practical work.

Contents and scope of the subject

Topic name and content description	Number of the contact hours, FT form			Number of the contact hours, PT form			I	Total number of hours
	T	P	C	T	P	C		
1. Concept and use of georeference data. A practical work No 1. The use of georeference data in the online environment. Objective: to analyse the given georeference data in the browser www.geoportal.lt and to apply them for solving the geodetic and cartographic tasks.	4	6	-	2	-	8	-	10
2. Development of georeference base: the purpose of georeference base; clarification and update of georeference base. An individual work No 1. Georeference base of Lithuania Objective: to analyse the need for development of georeference base of Lithuania, its topics and opportunities of clarification and update.	4	-	-	4	-	-	8	12
3. Components of georeference base: an object of georeference base; spatial data. An individual work No 2. Data of georeference base of Lithuania Objective: to acknowledge with and analyse the given georeference spatial data in the browser www.geoportal.lt.	2	-	-	-	-	2	8	10
4. Cadastre of georeference base (hereinafter − GRPK) Practical work No 2. Cadastre of georeference base. Objectives: Objectives: to perform the search for the spatial data in the browser www.geoportal.lt according to the type of maps, coordinate system, the scale, orientation, publicity, data type, format, year of publication and geographical search of the spatial data according to: the indicated, inscribed area of the dominant coverage	4	8	-	-	4	8	10	22

(rectangle). An individual work No 3. Cadastre of georeference base. Objectives: to analyse GRPK, GDR50LT, GDR250LT, TOP50LKS, GV_DRLT and their specifications.								
An individual work. Preparation of the examination Objective: to prepare for the examination.	-	-	2	-	-	2	4	6
5. Methods for acquisition and saving of spatial data. Practical work No 3. Data conversion in "GIS" Objectives: to convert spatial "CAD" data by "ArcGIS" software An individual work No 4. "CAD" and "GIS" spatial data. Objective: to analyse spatial data of thematic spatial data set and to collect the necessary information about it.	-	14	-	2	6	6	10	24
6. Supplementation of data set by raster and vectorial data Practical work No 4. Supplementation of "GIS" database by raster and vectorial data. Objectives: to import specialised "GIS" data into "ArcMap" environment.	-	10	-	-	2	8	-	10
7. Topology of spatial databases Practical work No 5. Topology of spatial databases Objectives: to create topology of spatial data sets by applying topology rules. An individual work No 5. Topology of spatial data sets. Objective: to analyse topology rules and the course of use of spatial data sets.	2	10	-	-	6	6	8	20
8. Update of "GIS" data Practical work No 6. Update of "GIS" data. Objective: to update information of data set by using data from the Spatial Information Portal of Lithuania (www.geoportal.lt).	2	10	-	2	2	8	8	20
9. Metadata of geographic information and services Practical work No 7. File formation of "GIS" metadata Objective: to determine elements of "GIS" metadata or element groups of such metadata. Individual work No 6. File formation of "GIS" metadata Objectives: to analyse standards and requirements for preparation of metadata	2	6	-	-	6	2	8	16
Preparation for the examination	-	-	4	-	-	4	6	10
Total number of hours	**20**	**64**	**6**	**10**	**26**	**54**	**70**	**160**

Assessment system of results of the subject studies

Result number of the study subject	Assessment criteria of results of the study subject
A2.1.	Assessment of opportunities for use of image map by vectorising raster view.
B1.1.	Processing of measurement data by "ArcGIS" software.
B2.1.	Display of spatial data in cartographic view by using a unified sign system.
B2.2.	Assessment of opportunities for use of "ArcGIS" software by analysing contents of georeference data sets.
C2.1.	Quantitative and qualitative assessment of attribute data.
C2.2.	Understanding of benefits of georeference data sets to the system of registers and cadastres of Lithuania
C4.1.	Assessment of "GIS" software for the creation of thematic spatial data sets from the existing selection opportunities on the market.
C4.2.	Use of software by creating attribute tables and assessment of information about the spatial data in them

Procedure of evaluation
A ten-point criterial grading scale and system of an individual cumulated grading are applied.

$$IKV = \sum_{i=1}^{n} X_i \times k_i$$

n −number of interim assessments (evaluation of 2 tests, evaluation of 1 individual works and evaluation of 3 practical works).

Xi − evaluations for interim assessments and examination (evaluation of tests − 30%, evaluation of an individual work − 10% and evaluation of practical works − 60%).

ki − weighted coefficients of interim assessments and examination (all interim works will be evaluated on a 10-point criterial grading system from 5 to 10 points, the weighted coefficient of all interim assessments is equal to 1).

Recommended literature and other information sources

		Number of copies	
No	**Literature and information sources**	**At the library of the Faculty of Technologies**	**At other libraries of Klaipeda State University of Applied Sciences**
Primary literature and information sources			
1.	Kumetaitienė A. (2010). *Skaitmeninių žemėlapių sudarymas ir duomenų apdorojimas*: mokomoji knyga . Vilnius: Technika.	10	-
2.	Juodkienė V. (2013). *Aplinkos geografinės informacinės sistemos: mokomoji knyga*. LŽŪU Leidybos centras Leidybos centras.	10	-
3.	Gurklys V. (2008). *Aplinkos geografinės informacinės sistemos: metodiniai patarimai*. LŽŪU Leidybos centras.	10	-
4.	Rekus D. Urbanavičius V. Pekrosnienė I. (2008). *Georeferencinės duomenų bazės*. K.: UAB „Vaistų žinios".	15	-
5.	Rusonytė D. (2013). Geografinės informacinės sistemos. Praktiniai darbai: mokymo(si) priemonė. KK Geodezijos katedra	Electronic publications of Klaipėda State University of Applied Sciences	-

	Additional literature and information sources
No	**Literature and information sources**
1.	Jensen, John R. (2013). *Introductory geographic information systems*, Boston, (N.J.): Pearson
2.	Peterson Gretchen N. (2009). *GIS Cartography: a guide to Effective map design*. Boca Raton (Fla.): CRC Press
3.	Kennedy M. (2006). *Introducing Geographic information systems with ArcGIS: featuring GIS Software from Environmental Systems Research Institute*, Hoboken (N.J.): John Wiley & Sons.
4.	Žurnalai "Geodezija ir kartografija", V.: Technika, 2000-2013

Description of the subject was prepared by:

Lecturer		Lina Kuklienė
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