BELARUSIAN STATE UNIVERSITY
DEPARTMENT OF GEOGRAPHY

GIS-technologies for Land Administration
The Program of the University Course for Master Students

Lections	26 academic hours
Laboratory GIS Projects	16 academic hours
Controlled Personal GIS Projects	34 academic hours

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The overall goals of the course "GIS-technologies for land administration" are to:

- promote understanding of the land administration components and land administration systems;
- allow students to formulate institutional, operational and technological requirements for operating land administration procedures in a transitional environment;
- allow students to specify and operate (geo-)information technology relevant to the functioning of land administration systems.

The particular objectives of each chapter of the course text are outlined below.

Chapter 1. Introduction. Principles of Land administration
Concepts and functions of land administration systems; Land use, Land tenure and Land rights, Cadastral Systems; Geo-Information Modelling in Land administration.

Chapter 2. Application of GIS in Land administration
Land Information System (LIS): definition and objectives; Cadastral models for LIS; System development methodologies; Modelling concepts, modelling processes and data in LIS; Spatio-temporal models and their applications in land administration; user requirements and their analysis for a Land Information System in a changing institutional environment.

Chapter 3. Data handling technologies in Land administration
Different kinds of Land Administration Data (person, land rights and objects); data forms (digital and analogue); Geodetic systems, projection systems, Geo-referencing and transformation, Global Positioning System (GPS), GPS infrastructure and total station surveys, mobile GIS; 2D digitizing and scanning of the cadastral maps, field sketches and legal documents; Photogrammetric and Image processing techniques using stereo aerial photographs and high resolution images (IKONOS, Quick bird, LIDAR); ortho-photo production; Data Input and maintenance of field datasets in cadastral databases.

Chapter 4. Land policy and land management
Land policy: importance, role in society and economy, implementation instruments and supporting tools; Implementation of land policy: improving tenure security, interventions in the land markets, macro- and micro-economic aspects, institutional economic aspects; land taxation; land use planning; land reform; Management of state land; Conflict Management and dispute resolution.

Chapter 5. Land Information Infrastructure
Properties of land information infrastructures; International directions of cadastres and spatial data infrastructures; Infrastructure Implementation (service oriented architectures; institutional aspects and stakeholder analyses; economic aspects and e-procurement).

Chapter	All academic hours	Lections	Laboratory GIS-projects	Controlled personal GIS-project
Chapter 1. Introduction. Principles of Land administration	12	4	2	6
Chapter 2. Application of GIS in Land administration	22	6	6	10
Chapter 3. Data handling technologies in Land administration	18	6	4	8
Chapter 4. Land policy and land management	12	6	2	4
Chapter 5. Land Information Infrastructure	12	4	2	6
All	76	26	16	34

Literature for Reading:

1. Using ArcCatalog. – Redlands, USA: ESRI, 2004.
2. Building a Geodatabase. – Redlands, USA: ESRI, 2004.
3. Using ArcMap. – Redlands, USA: ESRI, 2004.
4. Editing in ArcMap. – Redlands, USA: ESRI, 2004.
5. Using ArcGIS Spatial Analyst. – Redlands, USA: ESRI, 2004.
6. Using ArcGIS 3D Analyst. – Redlands, USA: ESRI, 2003.
7. Using ArcScan for ArcGIS. – Redlands, USA: ESRI, 2003.
8. Using ArcGIS Survey Analyst. – Redlands, USA: ESRI, 2003.
9. Using Image Analysis for ArcGIS. – Norcross, USA: Leica Geosystems, 2006.