Technical University Of Moldova
Faculty of Constructions, Geodesy and Cadastre

Spatial data use for university courses within TUM

Ph.D., Lecturer SÎRBU Rodica

THE PURPOSE OF THE PRESENTATION

✓*Stakeholder familiarization regarding the use of spatial data for teaching courses and developing students' works within Technical University of Moldova.*

ABOUT TUM.....

	Technical University of Moldova, Chisinau, Republic of Moldova
Technical University of Moldova has 12 faculties + TUM College	Faculty of Energetics and Electrical Engineering Faculty of Mechanical Engineering and Transport Faculty of Engineering and Management in Electronics and Telecommunications Faculty of Computers, Informatics and Microelectronics Faculty of Technology and Management in Food Industry Faculty of Light Industry/Faculty of Design Faculty of Architecture and Urban Planning Faculty of Constructions, Geodesy and Cadastre Faculty of Economic Engineering and Business **Faculty of Agronomy** **Faculty of Horticulture** **Faculty of Veterinary Medicine** TUM College

New TUM structure, on September, 2022

GEO BIZ
Co-funded by the Erasmus+ Programme of the European Union

THE BOLOGNA PROCESS.....

Bachelor's Degree – 3/4 years (240/180 ECTS)

Master's Degree – 2/1.5 years (120/90 ECTS)

PhD – 3/4 year (240 ECTS)

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THE STUDY PROGRAMMES.....

Department Engineering, Law and Real Estate Valuation

- **Construction engineering and management;**
- **Evaluation and development of the property;**
- **Right.**

Department Civil engineering and geodesy

- **Constructions and civil engineering;**
- **Geodetic engineering and cadastre;**
- **Cadastre and land management;**
- **Fire engineering and civil protection;**
- **Mining engineering**

Study programs, cycle I, 240 ECTS, duration of studies - 4 years, full-time, or 5 years part-time.

GEO BIZ
Co-funded by the Erasmus+ Programme of the European Union

THE STUDY PROGRAMMES.....

II cycle
Structural engineering
Construction project management
Real estate appraisal and administration
Geomatics and cadastre
Fire engineering and civil protection
Real estate and cadastral law

Master's degree programs, cycle II, 90 ECTS credits with study duration - 1.5 years.

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Co-funded by the Erasmus+ Programme of the European Union

ABOUT FCGC.....

- ✓ Cycle I, License, 8 programmes (6+2);
- ✓ Cycle II, Master, 6 programmes + 2 programmes (SAUM);
- ✓ Cycle III, Ph.D, 3 programmes:
  - Geodesy and Geoinformational Technologies;
  - Cadastre, Land Monitoring and Regulating Economics and Management;

TOTAL 1100 students

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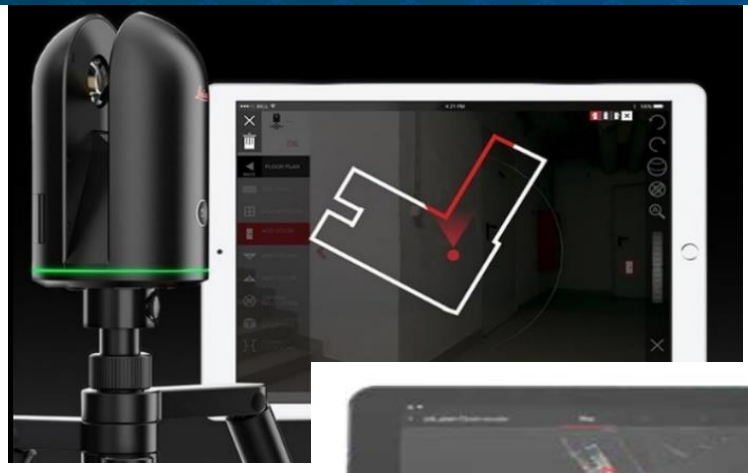
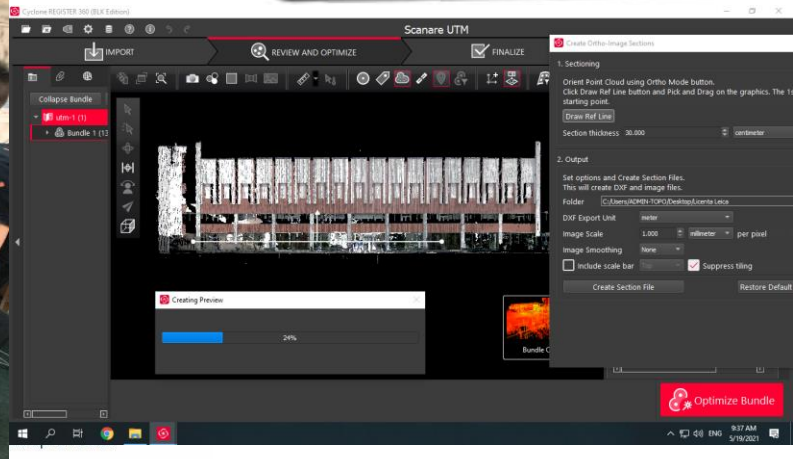
About the Geodetic Engineering and Cadastre study program.....

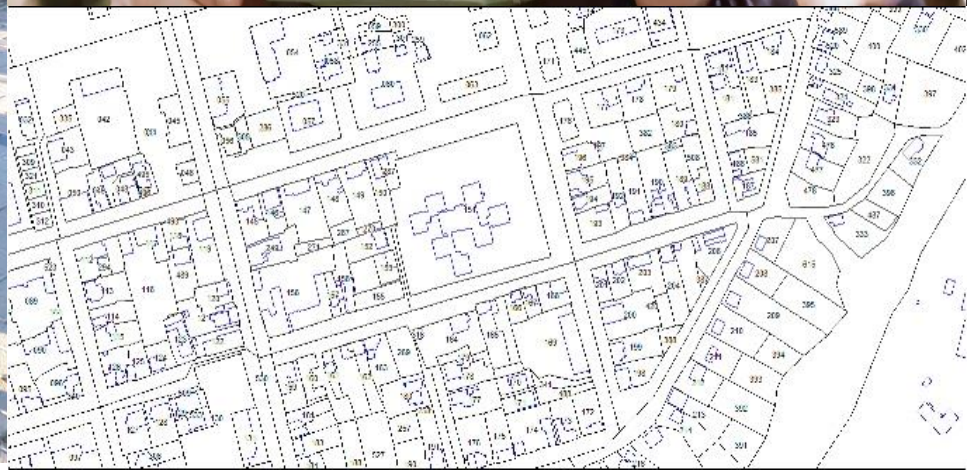
- PC, desktop/laptop, servers, WS;
- Network accessories for internet connection + Email outlook;
- ArcGIS Desktop Basic software;
- 2 Trimble geodetic GPS receivers;
- 2 Leica TTC;
- 1 Leica Digital level NA 3003;
- 1 digital photogrammetric WS from Geosystem;
- TUM MOODLE Platforma;
- **Leica BLK360 terrestrial scanner;**
- **Leica Cyclone Register 360 BLK Edition software with control tablet;**
- **Leica GS07 RTK GNSS receiver (Rover).**

EDUCATION – the most important success...





EDUCATION - the most important success...



RESEARCH- the important success.....

- ✓State programs, research and innovation (2020 - 2023);
- ✓Transborder project HAZARM (2020-2022)

Programme funded by the European Union

B.R.C.T. IAŞI
INTRARE NR. 570
IEŞIRE
Ziua 11 luna 02 anul 2020

Romania-Republic of Moldova
ENI CROSS BORDER COOPERATION

Annex 8

PROJECT SELECTION COMMITTEE
Of the 2nd Call for Proposals
Joint Operational Programme Romania - Republic of Moldova 2014-2020
NOTIFICATION TO THE APPLICANTS
STEP 2

11.02.2020

Gheorghe Asachi Technical University of Iasi

Call for proposals: 2nd Call for Proposals, Joint Operational Programme Romania–Republic of Moldova 2014-2020

HAZARM - Integrated Networks for Hazard Risk Management in Republic of Moldova and Romania

B. PARTNERS

Universitatea Tehnică ”Gheorghe Asachi” din Iași, România

Leader of the HAZARM PROJECT

PARTENER

Universitatea Tehnică a Moldovei
Chișinău, Republica Moldova

PARTENER

Institutul de Geologie și Seismologie
Chișinău, Republica Moldova

The Faculty collaborates with the national institutions.....

- ✓ *Faculty of Constructions, Geodesy and Cadastre has signed about 100 cooperation agreements with specialized institutions in the Republic of Moldova (specialized practice, seminars, visits and excursions, workshops, conferences, sponsorship, etc).*

GEO BIZ
Co-funded by the Erasmus+ Programme of the European Union

The Faculty collaborates with the international universities

- **University of Zagreb, CROATIA (with all GEOBIZ PARTNERS)**
- **Universities of Life Science, POLAND (Lublin,** Kraków, **Poznan);**
- **Technical University of Civil Engineering, Bucharest, ROMANIA;**
- **Technical University "Gh. Asachi", Iasi, ROMANIA;**
- **Technical University of Cluj-Napoca, ROMANIA;**
- **University of Oradea, Romania, ROMANIA;**
- **University „Transilvania", Brasov, ROMANIA;**
- **Technical University, Timisoara, ROMANIA;**
- **University of Architecture and Construction, UKRAINE (Lviv, Kiev, Odessa, Kharkiv);**
- **University of Construction, Moscow, RUSSIA;**
- **Universities from ARMENIA (with 3 universities)**
- **Tehnical University from Baku, AZERBADJAN;**
- **Universities from KAZAHSTAN (with 3 universities)**
- **Technical University of Riga, LATVIA;**
- **Technical Royal School of SWEDEN (KTH);**
- **University of Lyon, FRANCE;**
- **UNIVERSITE SAAD DAHLEB BLIDA 01, BLIDA, ALGERIA;**
- **etc**

GEO BIZ
Co-funded by the Erasmus+ Programme of the European Union

OUR INTERNATIONAL EXPERIENCE.....

- 2001-2003 Cooperation in the frame of Project “Modernization of educational System in Cadastre” Sweden International Development Assistance (SIDA);
- 2004–2006 Project “Education in Geographical Information Technology” supported by EU, TEMPUS;
- 2010- Project “Development of a High Capacity Real-Time GNSS Positioning Service for Moldova (MOLDPOS)” – University of Applied Sciences, Karlsruhe, Germany;
- 2010-2013-511322-TEMPUS-1-2010-SE-JPCR Geographic information technology for sustainable development in Eastern neighbouring countries (GIDEC);
- 2012-2013 - Seventh framework program, FP7-GALILEO-2011-GSA-1, GALILEO.2011.4.3-1 INTERNATIONAL ACTIVITIES project title: EGNOS EXTENSION TO EASTERN EUROPE: APPLICATIONS.

EDUCATION - the most important success...

- ✓ ERASMUS+ KA1 Academic Mobility (France, Romania, Poland, Italy, Croatia) (2016 – in present);
- ✓ ERASMUS+ KA2 Capacity Building in High Education (2019-2022);
- ✓ ERASMUS + Programme, 2 Capacity Building - “Fostering university-enterprise cooperation and entrepreneurship of students via SMART Caffes/SMART” (2017-2021);
- ✓ ERASMUS+ Programme, 2 Capacity Building - Connecting universities-industry through smart entrepreneurial cooperation and competitive intelligence of students in Moldova, Georgia and Armenia (2021-2024);
- ✓ "Support of teaching innovation, Research development and Inter-university cooperation of SAUM and TSU (Moldova)" realized by the Czech University of Life Sciences Prague, funded by the Ministry of Foreign Affairs of the Czech Republic - Czech Republic Development Cooperation (2021-2022) .

INITIATIVES AND TRENDS…..

- good courses/training of graduates;
- organization of training courses for specialists;
- development of national (internships of students in state and private institutions, then their subsequent employment) relations and international collaboration (active participation in various projects) etc.

GEO BIZ
Co-funded by the Erasmus+ Programme of the European Union

Study Plan, the Ist year of study

the year 2016 vs 2021 year

PLAN VECHI 2016

ANUL I

Semestrul I

Cod	Denumirea unității de curs/modulului	Total ore	Nr. Credite
		Total	
Trunchi comun			
F.01.O.001	Matematica superioară I	180	6
F.01.O.003	Fizica I	150	5
F.01.O.005	Grafica inginerească	150	5
G.01.O.017	Tehnologii informaționale	120	4
G.01.L.019	Limba română (pentru alolingvi) I	60	2
G.01.O.021	Educația fizică I	30	
G.01.O.023	Limba străină I	60	2
G.01.O.018	Etica profesională și bazele comunicării	120	4
U.01.A.027	Teoria economică și integrarea economică europeană	120	4
U.01.A.028	Practica integrării europene		
	Total semestrul I:	**990**	**30**

PLAN NOU 2021

Anul I

Semestrul I

G.0.001	Limba română (pentru alolingvi) I	30	2*
G.0.003	Educaţia fizică I	30	0
G.0.007	Limba străină I	120	4
F.0.001	Analiza matematică I	120	4
F.0.003	Algebra liniară și geometria analitică	90	3
F.0.007	Grafica inginerească	150	5
F.0.005	Fizica I	150	5
F.0.008	Bazele geometrice ale fotogrammetriei	90	3
G.0.009	Comunicare și scriere academică	90	3
G.0.010	Tehnologii informaţionale	90	3
	Total semestrul I	**900**	**30**

Study Plan, the Ist year of study
the year 2016 vs 2021 year

PLAN VECHI 2016

Semestrul II

Cod	Denumirea unității de curs/modulului	Total ore	Nr. Credite
		Total	
	Trunchi comun		
F.02.O.002	Matematica superioară II	180	6
F.02.O.004	Fizica II	150	5
F.02.O.007	Topografie	180	6
G.02.L.020	Limba română (pentru alolingvi) II	60	2
G.02.O.022	Educația fizică II	30	
G.02.O.024	Limba străină II	60	2
	Traseul individual		
F.02.O.008	Bazele geometrice ale fotogrammetriei (BGF)	120	4
F.02.O.006	Curs general de construcții	120	4
	Total semestrul II:	**900**	**27**
	Practica de inițiere (de topografie) (30 ore x 3 săptămâni)	90	3
	Total anul I de studii:	**1980**	**60**

PLAN NOU 2021

Semestrul II			
G.0.002	Limba română (pentru alolingvi) II	30	2*
G.0.004	Educaţia fizică II	30	0
G.0.008	Limba străină II	120	4
F.0.002	Analiza matematică II	120	4
F.0.006	Fizica II	150	5
G.0.011	Bazele programării calculatoarelor	90	3
F.0.010	Topografia	180	6
D.0.001	Geoinformatică (PBL)	120	4
Total semestrul II		**780**	**26**
S.O.012	Practica de inițiere (topografică)	120	4
Total anul I		**1800**	**60**

Study Plan, the IInd year of study
the year 2016 vs 2021 year

PLAN VECHI 2016

Semestrul III

Cod	Denumirea unității de curs/modulului	Total ore	Nr. Credite
		Total	
Trunchi comun			
U.03.A.029	Bazele statului şi drept	120	4
U.03.A.030	Drept civil		
G.03.O.025	Limba străină III	60	2
F.03.O.010	Geologie inginerească si mecanica pamînturilor	120	4
Traseul individual			
F.03.O.009	Analiza numerică şi programare	120	4
F.03.O.011	Teoria erorilor	150	5
F.03.O.013	Geodezie elipsoidală	180	6
F.03.O.012	Desen topografic	150	5
	Total semestrul III:	900	30

PLAN NOU 2021

Semestrul III			
G.0.005	Educaţia fizică III	30	0
F.0.004	Matematici speciale	90	3
U.A.001	Etică şi integritate academică	60	2
U.A.101	Comportament organizațional		
U.A.002	Bazele statului și dreptului	60	2
U.A.102	Dreptul de proprietate intelectuală		
D.0.003	Clădiri civile	120	4
D.0.002	Sisteme geoinformaționale	150	5
F.0.009	Desen topografic și cartografic	150	5
D.0.004	Teoria erorilor	120	4
D.0.005	Geodezia elipsoidală	150	5
	Total semestrul III	**900**	**30**

Study Plan, the IInd year of study
the year 2016 vs 2021 year

PLAN VECHI 2016

Semestrul IV

Cod	Denumirea unității de curs/modulului	Total ore	Nr. Credite
		Total	
Trunchi comun			
U.04.A.031	Filosofia	120	4
U.04.A.032	Istoria filosofiei		
G.04.O.026	Limba străină IV	60	2
F.04.O.014	Urbanism si sistematizarea teritoriului	120	4
F.04.O.015	Sisteme Geoinformaționale	120	4
Traseul individual			
S.04.O.033	Geodezie tridimensională	120	4
S.04.A.042	Teoria prelucrării masurătorilor geodezice	120	4
S.04.A.043	Statistică și compensări geodezice		
S.04.A.044	Automatizaraea lucrărilor topografice	120	4
S.04.A.045	Topografie digitală		
	Total semestrul IV:	**780**	**26**
	Practica în producție (de geodezie) (30 ore x 4 săptămâni)	120	4

PLAN NOU 2021

Semestrul IV			
G.0.006	Educaţia fizică IV	30	0
D.0.006	Urbanism si sistematizarea teritoriului	120	4
D.0.007	Geodezie tridimensională	150	5
S.O.003	Teoria prelucrării masurătorilor geodezice	150	5
S.O.002	Teledetecție	150	5
S.O.001	Prelucrarea automata a datelor geodezice	150	5
Total semestrul IV		**720**	**24**
S.O.013	Practica în producție (geodezică)	180	6

Study Plan, the IIIrd year of study

the year 2016 vs 2021 year

PLAN VECHI 2016

Semestrul V

Cod	Denumirea unității de curs/modulului	Total ore	Nr. Credite
		Total	
Trunchi comun			
F.05.O.016	Cadastru I	150	5
Traseul individual			
S.05.O.034	Geodezie inginerească	120	4
S.05.O.036	Geodezie fizică	150	5
S.05.A.046	Cartografie matematică	150	5
S.05.A.047	Reprezentări cartografice		
S.05.A.048	Sisteme Geoinformaționale avansate	150	5
S.05.A.049	Geoinformatica		
S.05.O.035	Fotogrammetrie	180	6
	Total semestrul V:	900	30

PLAN NOU 2021

Semestrul V			
U.A.003	Filosofie și gândire critică	120	4
U.A.103	Filosofie și gândire inginerească		
D.0.009	Economia construcțiilor	120	4
D.0.008	Cadastru I	150	5
S.O.005	Cartografie matematică	150	5
S.O.004	Geodezie fizică	180	6
D.0.010	Fotogrammetrie	180	6
Total semestrul V		**900**	**30**

Study Plan, the IIIrd year

the year 2016 vs 2021 year

PLAN VECHI 2016

Semestrul VI

Cod	Denumirea unității de curs/modulului	Total ore	Nr. Credite
		Total	
	Traseul individual		
S.06.A.050	Cadastru II	150	5
S.06.A.051	Sisteme Informaționale Teritoriale		
S.06.O.038	Geodezie cu sateliți	150	5
S.06.O.037	Fotogrammetrie digitală	180	6
S.06.A.052	Geodezie inginerească avansată	150	5
S.06.A.053	Topografie inginerească		
S.06.A.054	Cartografie digitală	150	5
S.06.A.055	Modelare cartografică		
	Total semestrul VI:	**780**	**26**
	Practica în producție (de geodezie inginerească, fotogrammetrie și cadastru) (30 ore x4 săptămâni)	120	4

PLAN NOU 2021

Semestrul VI			
D.O.011	Geodezie inginerească	90	3
S.O.007	Cadastru II	150	5
S.O.008	Geodezie cu sateliți	120	4
S.O.006	Fotogrammetrie digitală	120	4
S.A.001	Sisteme Geoinformaționale avansate	120	4
S.A.101	Geomatică		
S.O.009	Cartografie digitală	120	4
	Total semestrul VI	**720**	**24**
S.O.014	Practica în producție (măsurători inginerești, fotogrammetrie și cadastru)	180	6

Study Plan IV

the year 2016 vs 2021 year

PLAN VECHI 2016

Semestrul VII

Cod	Denumirea unității de curs/modulului	Total ore	Nr. Credite
		Total	
Trunchi comun			
S.07.O.040	Securitatea vitalității	180	6
Traseul individual			
S.07.O.039	Managementul şi economia lucrărilor topogeodezice	180	6
S.07.O.041	Standardizare şi metrologie geodezică	180	6
S.07.A.056	Teledetecţie	180	6
S.07.A.057	Ridicări fotogrammetrice speciale		
S.07.A.058	Scanare laser terestră	180	6
S.07.A.059	Senzori-tehnică de prelucrare şi măsurare		
Total semestrul VII:		900	30

PLAN NOU 2021

Semestrul VII			
D.0.014	Securitatea și sănătatea în muncă	120	4
D.0.012	Drept imobiliar	120	4
D.0.015	Metrologie și controlul calității	150	5
S.A.002	Geodezie inginerească avansată	180	6
S.A.102	Topografie inginerească		
D.0.013	Managementul şi economia lucrărilor topo	180	6
S.A.003	Scanare laser terestră	150	5
S.A.103	Senzori-tehnică de prelucrare și măsurare		
Total semestrul VII		900	30

Study Plan, the IV year

the year 2016 vs 2021 year

PLAN VECHI 2016

Semestrul VIII

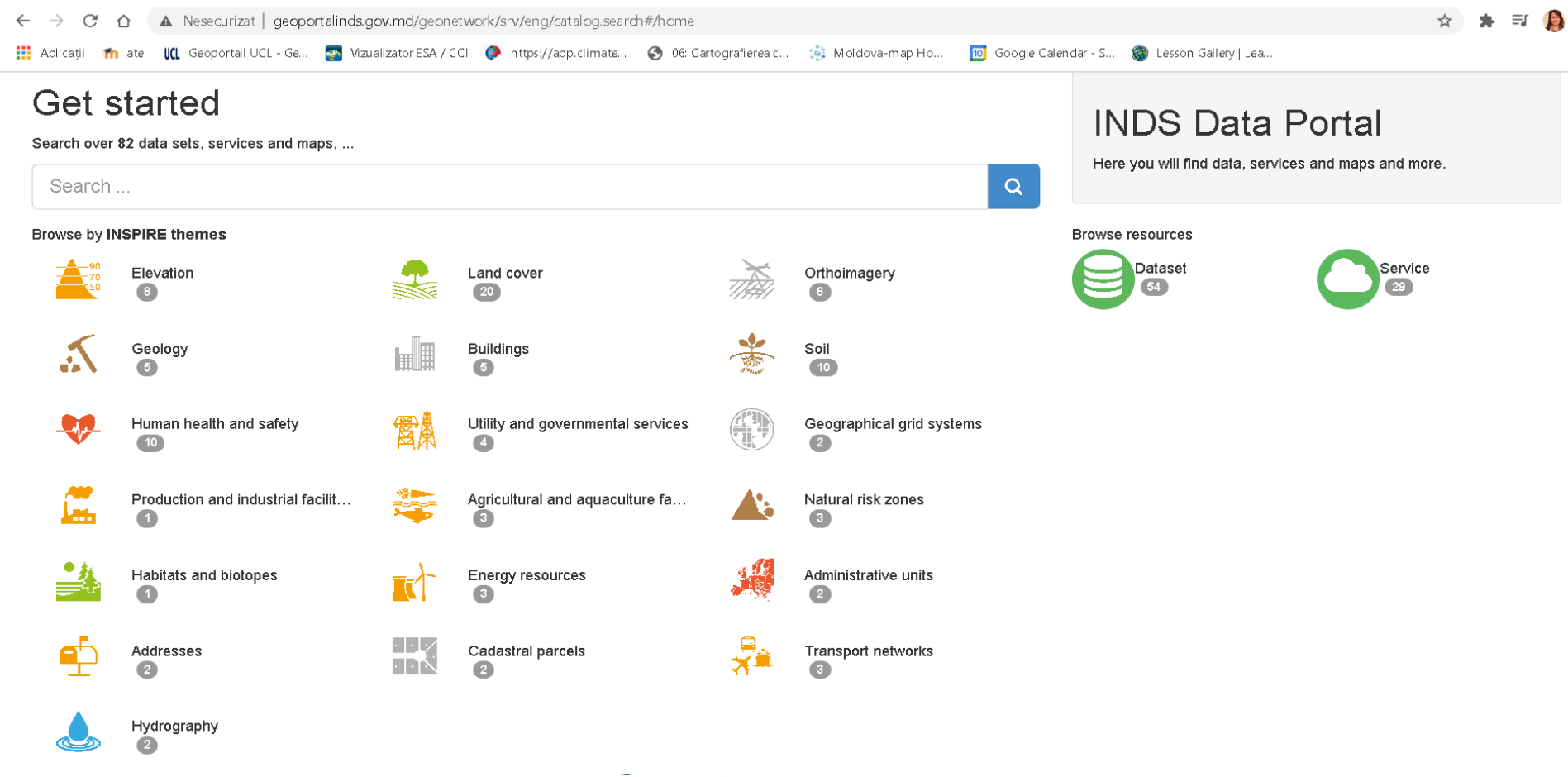
Cod	Denumirea unității de curs/modulului	Total ore	Nr. Credite
		Total	
	Proba teoretică de sinteză: *"Topografie, Geodezie, Cadastru, Sisteme Geoinformationale și Fotogrammetrie"*	120	4
	Practica de documentare la T/PL și elaborarea tezei/proiectului de licență	750	25
	Susținerea tezei/proiectului de licență	30	1
	Total semestrul VIII:	**900**	**30**
	Total anul IV de studii:	**1800**	**60**
TOTAL LA PROGRAMUL DE STUDIU:		**7380**	**240**

PLAN NOU 2021

Semestrul VIII			
S.O.011	PBL (Aplicatii WebGIS (open source))	120	**4**
S.O.010	Măsurători geodezice speciale	120	**4**
Total semestrul VIII		**240**	**8**
S.O.015	Practica de documentare de licență	240	**8**
S.O.016	Elaborarea și susținerea proiectului de	420	**14**
Total anul IV		**1800**	**60**
Total program de studii		7200	240

GIS EDUCATION

The importance of spatial data for university courses



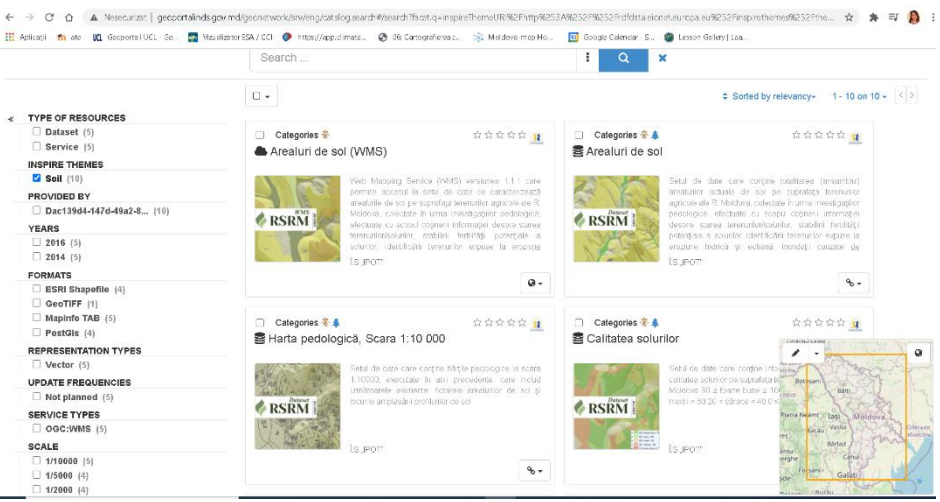
GIS EDUCATION

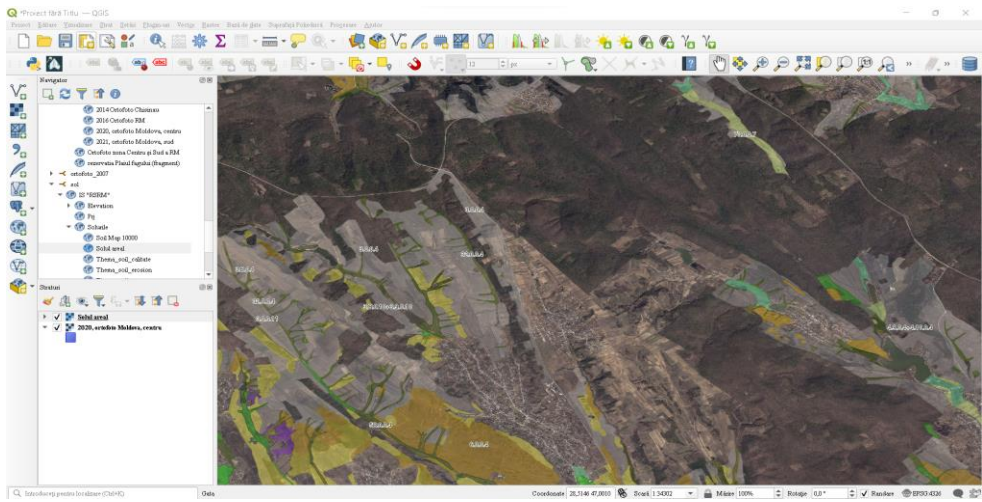
Promotion of spatial data infrastructure

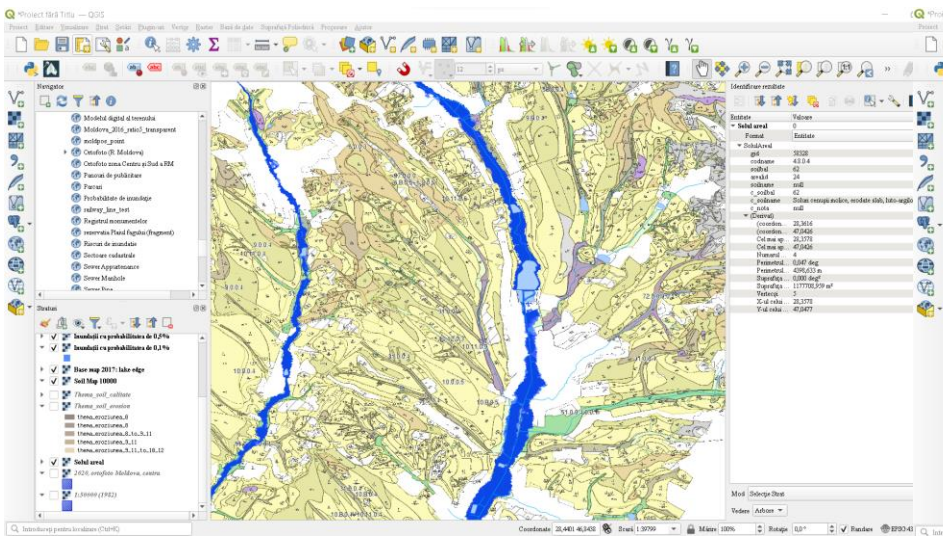
Continuarea activităţilor dedicate Zilei Sistemelor Informaţionale Geografice (#GISday). Studenţii anului IV #UASM, Facultatea Cadastru şi Drept, Departamentul 1, au beneficiat de o instruire cu referire la Infrastructura de Date Spaţiale. Mulţumim mult oaspeţilor.

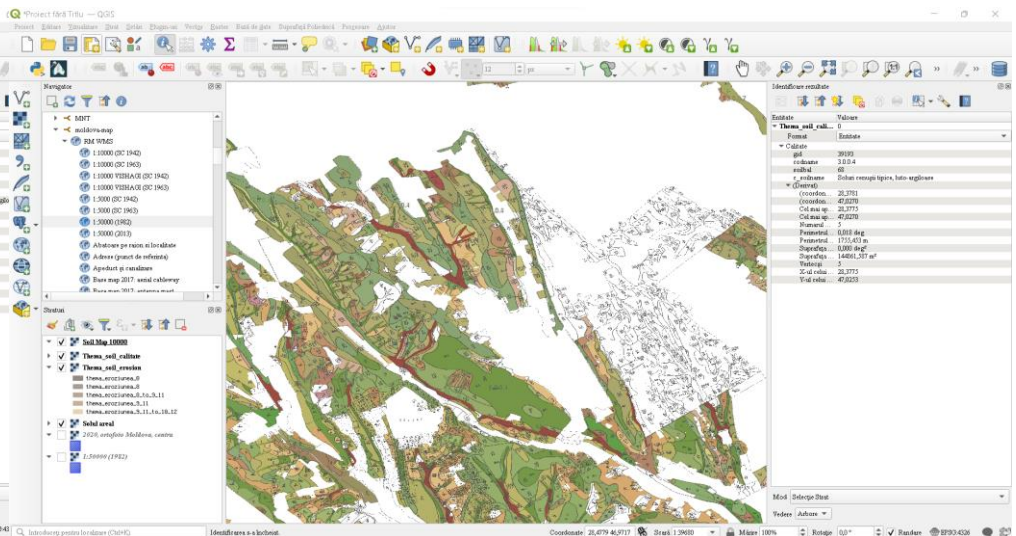
GIS Education

Landscaping of perennial plantations



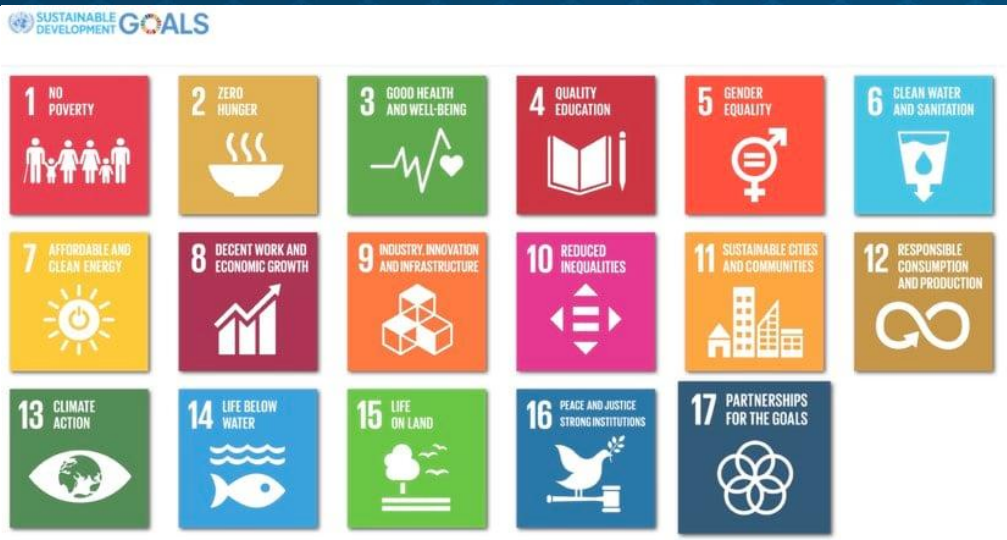


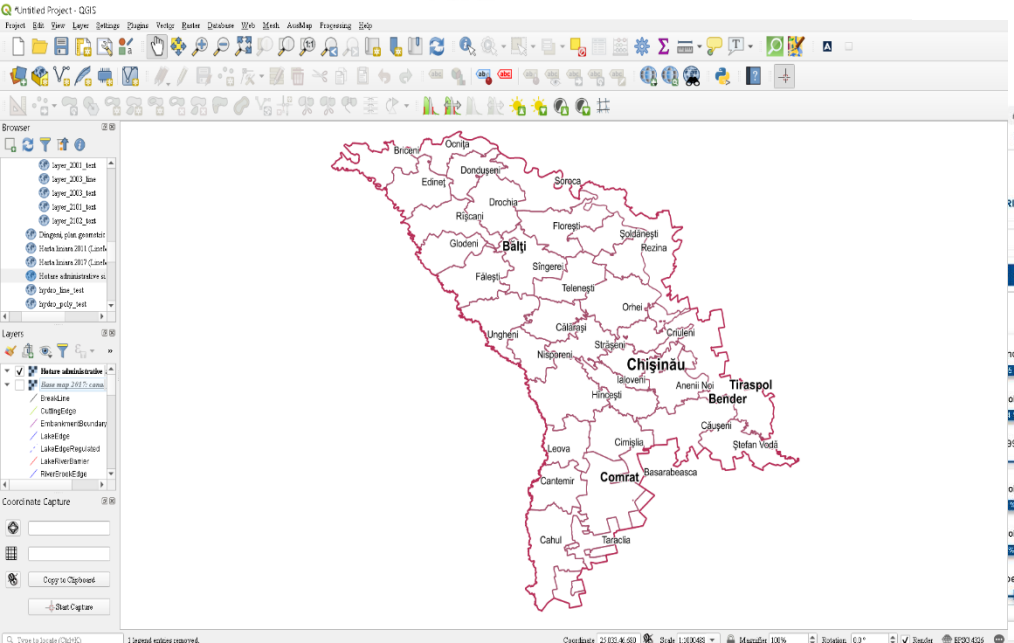


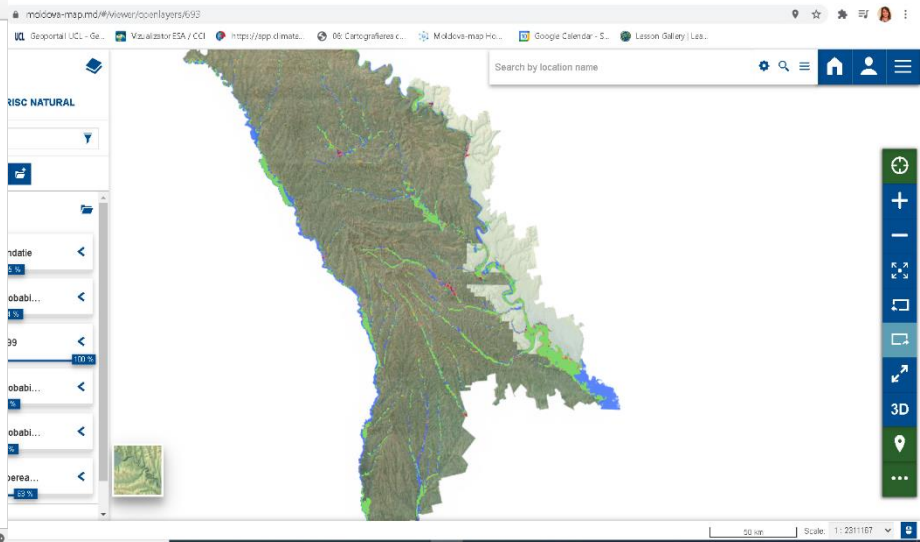


GIS Education

Sustainable Development

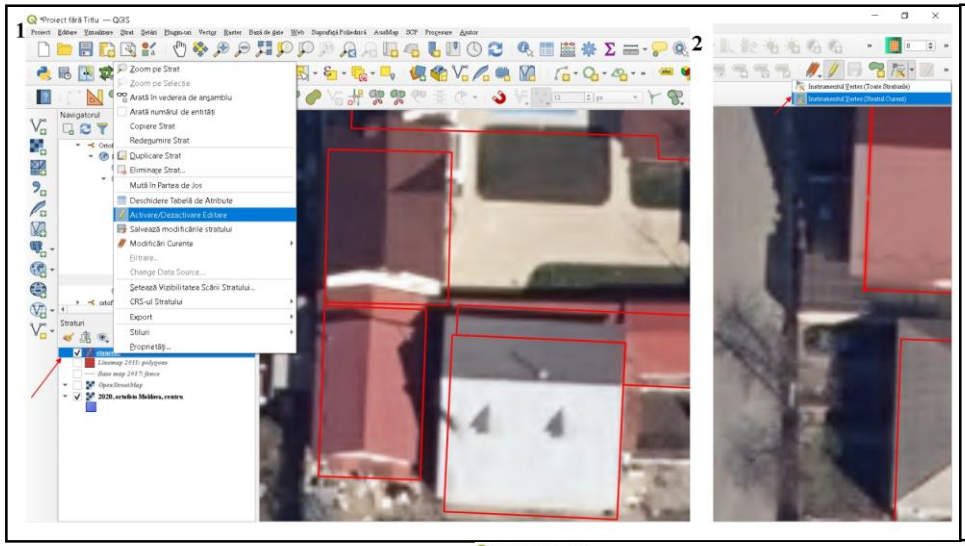


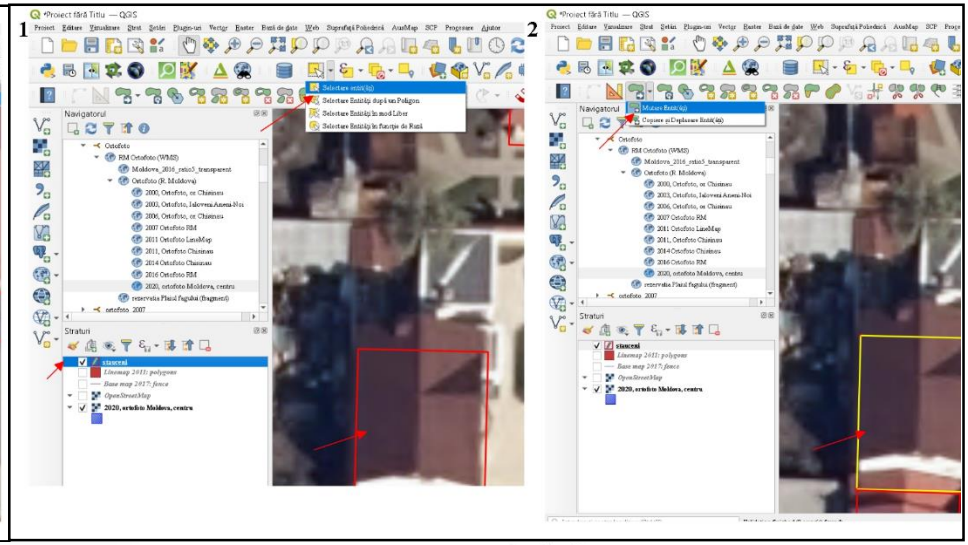


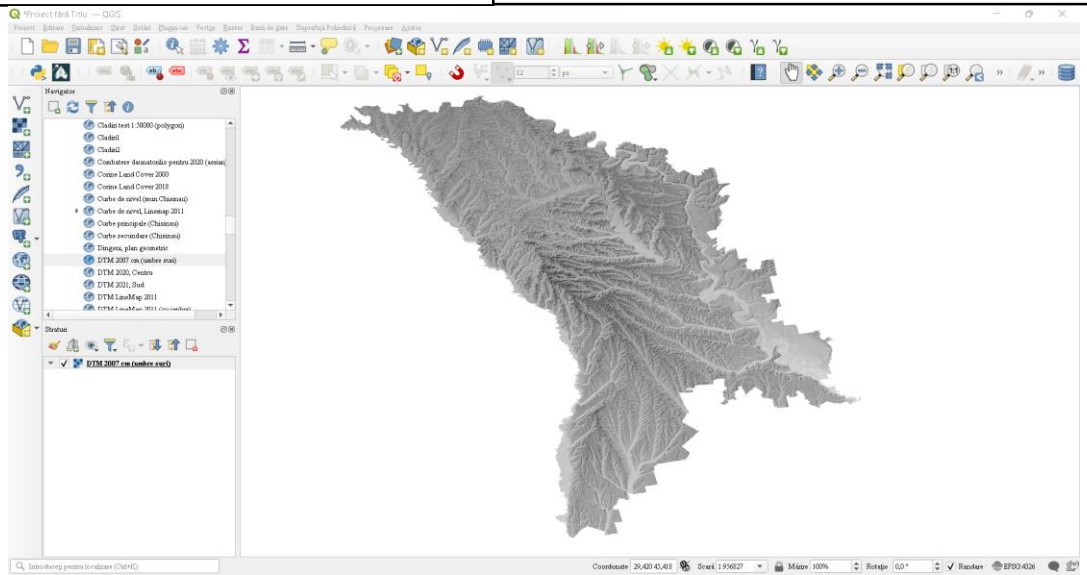


GIS Education

Geoinformational systems

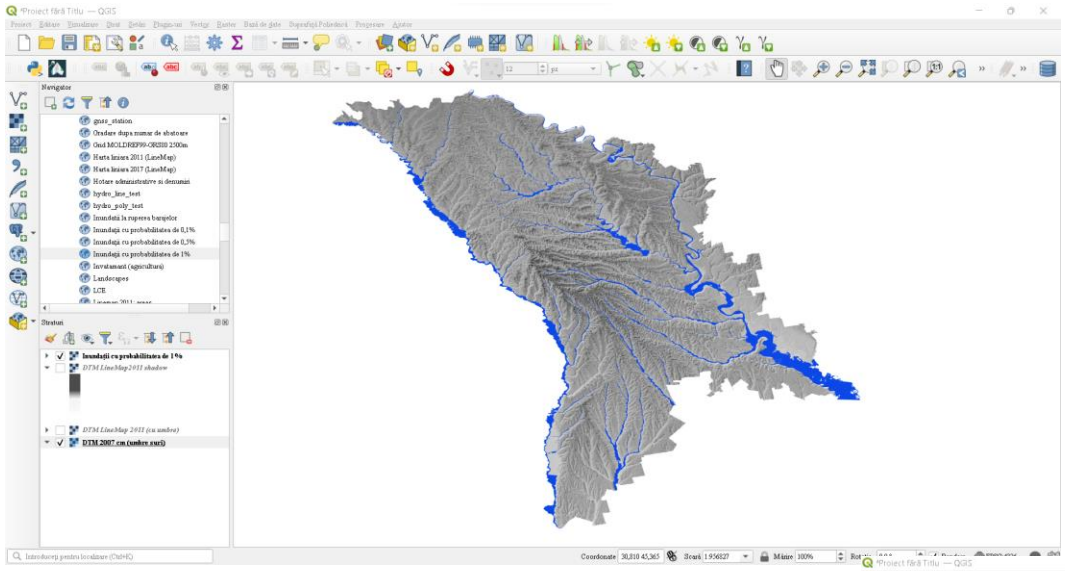


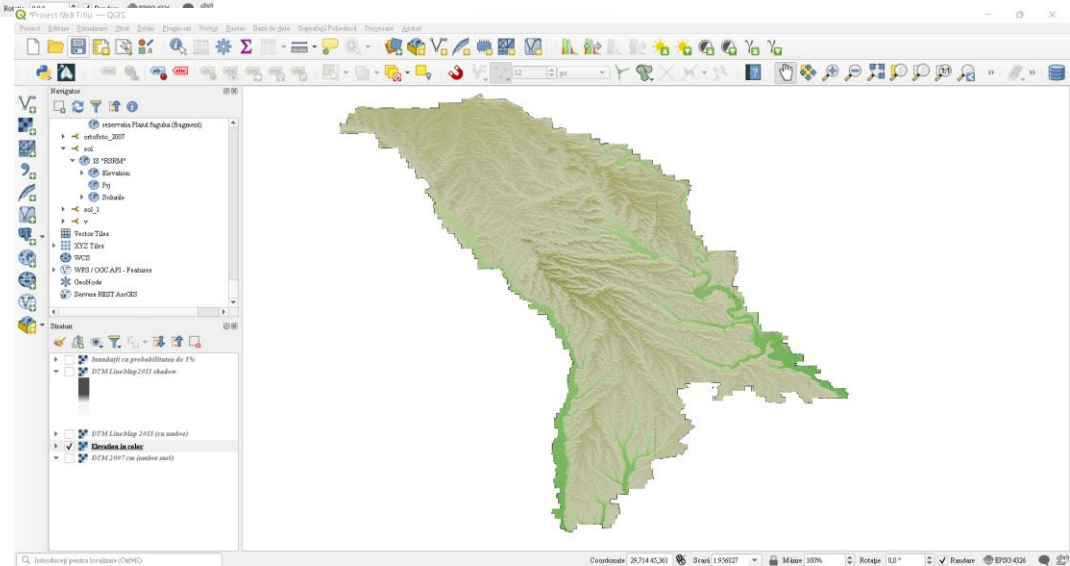




GIS Education

Advanced Geoinformational systems

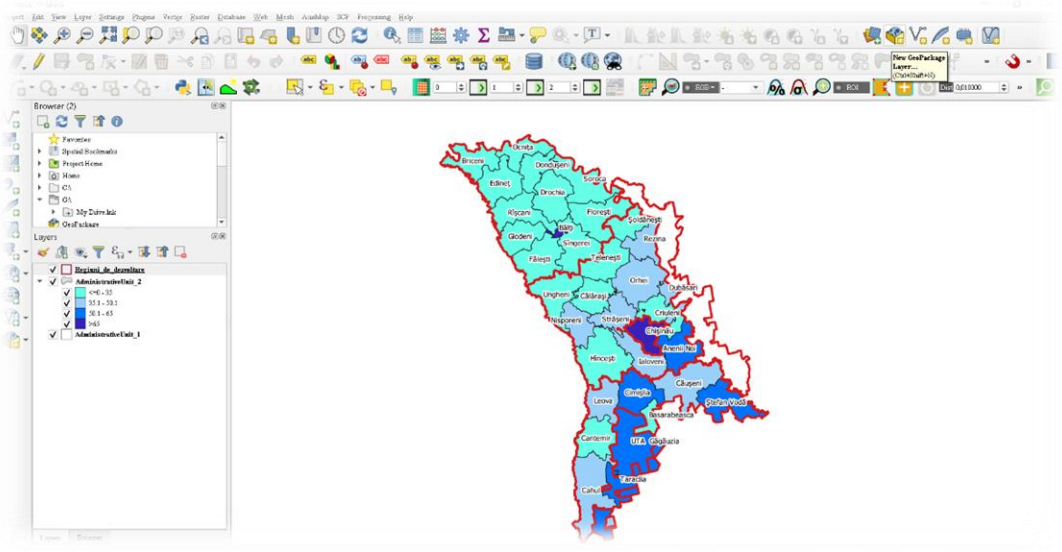


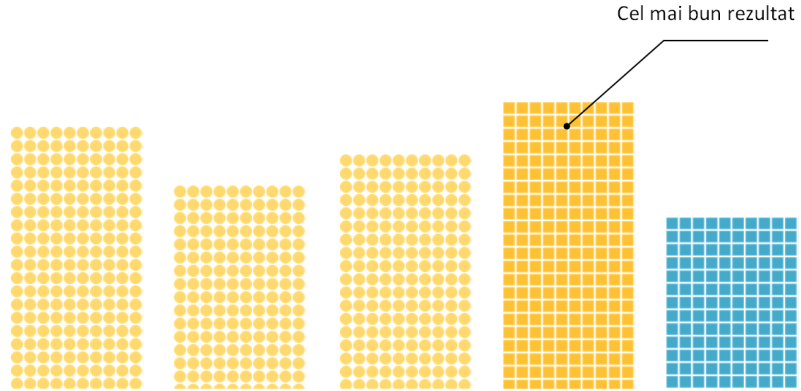


GIS Education

PBL – possible case studies using the application in GIS ...

- Optimization of land use. Urban planning
- Land consolidation
- Disaster modeling and management
- Monitoring of the pollution phenomenon, etc.



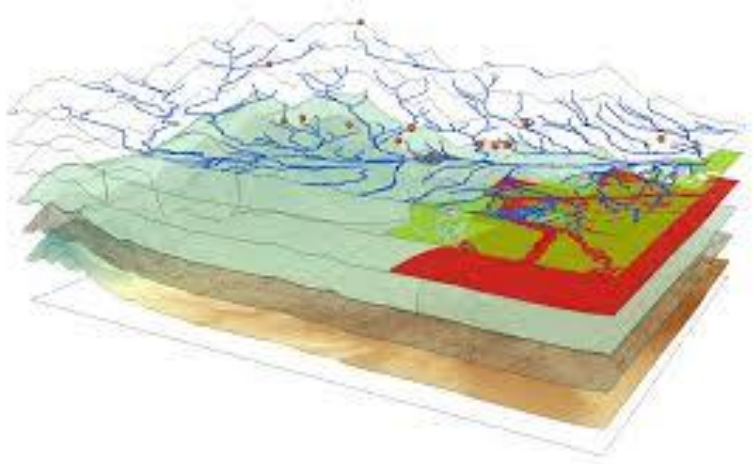


GIS Education

Needs and challenges:

1. We would like more possibilities to analyze the data already processed;

2. The COVID-19 pandemic demonstrated the need to use free and open GIS software and spatial data (very important - official data).



CONCLUSIONS…..

- ✓ ***Spatial Data Infrastructure is a very important component in the teaching process at UTM. Actually we find application of data sets to different topics of courses;***
- ✓ ***The academic community calls for continued efforts to diversify and permanently update spatial data;***
- ✓ ***The affiliation of the State Agrarian University of Moldova to the Technical University of Moldova, made the academic and professional community in the field of Topography, Geodesy, Cadastre, Photogrammetry, GIS, Remote Sensing will be much stronger in the Republic of Moldova, so we are a reliable partner regarding the use of data sets.***

FACULTATEA CONSTRUCȚII, GEODEZIE ȘI CADASTRU

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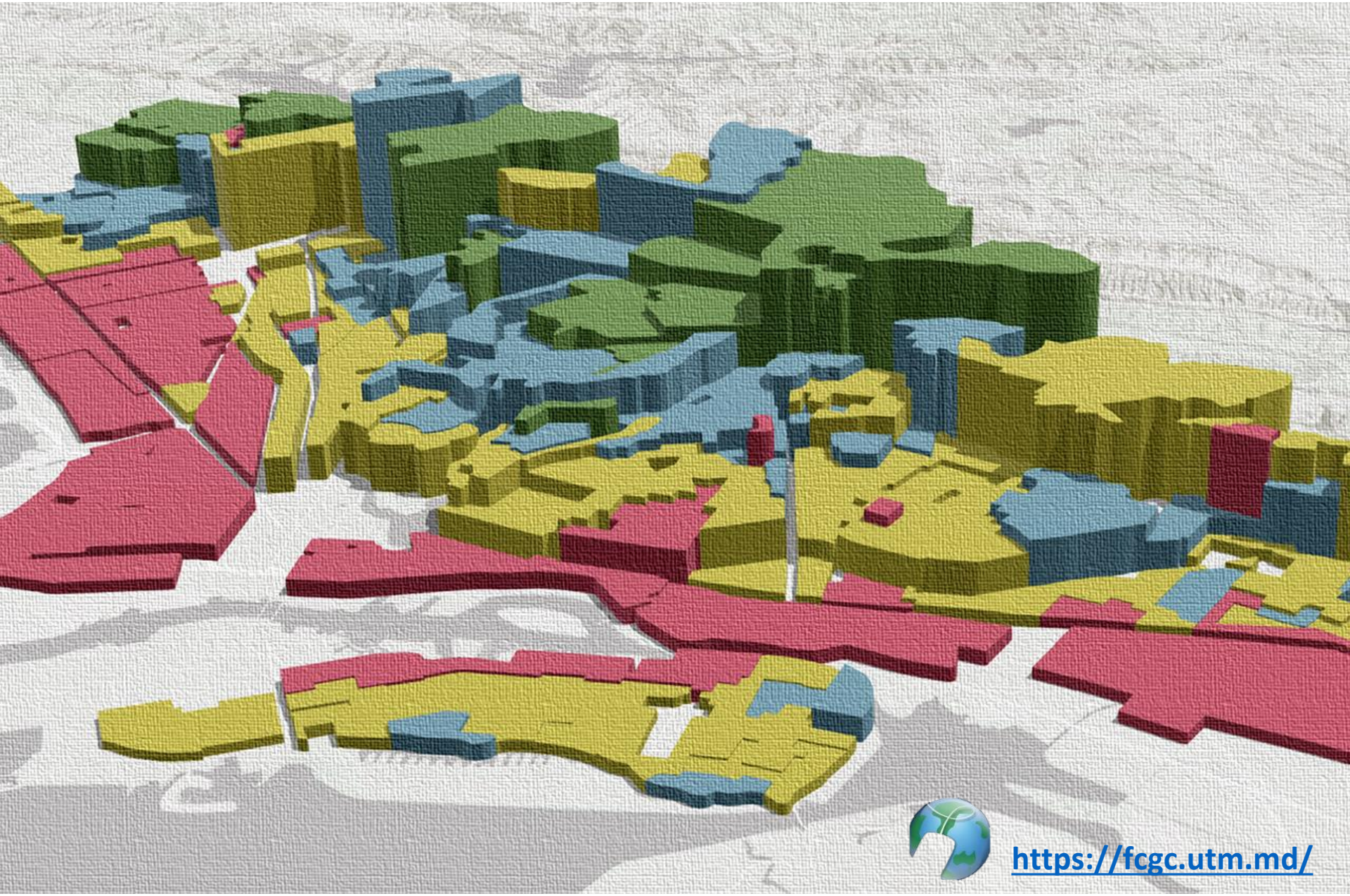
Thank you for your attention!



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