COURSE OUTLINE

1. Study programme information

1.1 Higher education institution	Universitatea de Vest din Timişoara
1.2 Faculty / Department	Chimie-Biologie-Geografie/Departamentul de Geografie
1.3 Sub-department	Geografie
1.4 Field of study	Geography
1.5 Level of study	Master's degree
1.6 Study programme / Qualification	Geographic Information Systems

2. Course information

2.1 Course title		WebGIS					
2.2 Course convenor/ Lecturer		Conf. univ. dr. Marcel Török-Oance					
2.3 Teaching assistant		Conf. univ. dr. Marcel Török-Oance					
2.4 Year of study	I	2.5 Semester	II	2.6 Type of assessment	E	2.7 Course type	DS

3. Total estimated time (hours of didactic activities per semester)

3.1 Number of hours per week	3	of which: 3.2 lecture	1	3.3 seminar/laboratory	2	
3.4 Total hours in the curriculum	42	of which: 3.5 lecture	14	3.6 seminar/laboratory	28	

Time distribution:	hours
Studying textbooks, course materials, bibliography and notes	18
Further research in libraries, on electronic platforms and in the field	21
Preparing seminars/ laboratories, homework, research papers, portfolios and essays	20
Tutoring	12
Examinations	12
Other activities	

3.7 Total hours of individual study	**83**
3.8 Total hours per semester	**125**
3.9 Number of credits	**5**

4. Prerequisites (if applicable)

4.1 based on curriculum	• GIS, Remote Sensing
4.2 based on competencies	• Basic knowledges in GIS and Remote Sensing

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5. Conditions (if applicable)

5.1 for the course	- at least 50% attendance at course activities; - Computer / laptop for the teacher, computers / laptops / tablets for each student, internet access, access to the Elearning UVT platform - Google Meet will be used for the online activity. 50% of the courses will be taught online
5.2 for the seminar/laboratory	- attendance is mandatory - complete fulfilment of tasks of laboratory work and projects - Computer with audio / video system and internet connection, GIS softwares (ArcgGIS, ArcGIS Online, ArcGIS Enterprise). - Google Meet will be used for the online activity. 30% of the practical activities will be taught online

6. Objectives of the discipline - expected learning outcomes to the formation of which contribute to the completion and promotion of the discipline

Knowledges	- Knowledge of concepts in WebGIS, architecture and technologies - Students are able to choose and apply appropriate methods of spatial analysis in WebGIS environment - Explaining the benefits of sharing spatial data across distributed infrastructures - Understanding the advantages and disadvantages of Web GIS technologies - Understanding the web services technologies - Publishing different type of services (mapping services, feature services, cached map services) ArcGIS Online platform.
Skils	• Hands-on skills in WebGIS, ArcGIS Online • Development of a web application with embedded web services (map services, cached services, feature services; • Documentation of published web services and developed web application in the form of an ePortofolio • Developing the ability of scientific analysis and communication in an academic environment
Responsibility and autonomy	• Applying efficient and responsible work strategies, based on the principles, norms and values of ethics in academic conduct; • Self-assessment of the need for continuous professional training in order to insert and adapt to the requirements of the labour market. • Applying efficient work techniques in a multidisciplinary team, ethical attitude towards the group, respect for diversity and multiculturalism; acceptance of diversity of opinion

6. Content

6.1 Lecture	Teaching methods	Observations
1. Introduction to Web GIS	Interactive	*** Course material posted on the elearning UVT platform

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	presentations, heuristic conversation, problematization and hands-on examples	Fu, P., Sun, J., 2018. Web GIS Principles and Applications, ESRI Press, Redlands, California
2. Web GIS architecture and Web Services technology		*** Course material posted on the elearning UVT platform
3. Services to visualize vector and raster spatial data (Mapping service and Cached Map service)		Fu, P., Sun, J., 2018. Web GIS Principles and Applications, ESRI Press, Redlands, California
4. Services to share raster data online		*** Course material posted on the elearning UVT platform
5. Services to interact with spatial data online (Feature services)		Fu, P., Sun, J., 2018. Web GIS Principles and Applications, ESRI Press, Redlands, California
6. Online spatial analysis		*** Course material posted on the elearning UVT platform
7. Development of web applications		Fu, P., Sun, J., 2018. Web GIS Principles and Applications, ESRI Press, Redlands, California

Bibliography
Fu, P., Sun, J., 2018. Web GIS Principles and Applications, ESRI Press, Redlands, California
*** Course material posted on the elearning UVT platform

6.2 Seminar / laboratory	Teaching methods	Observations
1. Storing spatial data in PostGIS database	Hands-on exercises, case studies, problem solving.	Fu, P., Sun, J., 2018. Web GIS Principles and Applications, ESRI Press, Redlands, California ArcGIS Online Tutorial. Online resource available at: https://doc.arcgis.com/en/arcgis-online/reference/what-is-agol.htm *** Laboratory material/tutorials posted on the elearning UVT platform
2. Searching and using data and web services discovered in available geoportals		Fu, P., Sun, J., 2018. Web GIS Principles and Applications, ESRI Press, Redlands, California
3. Publishing vector and raster data as cached map service using ArcGIS Online		ArcGIS Online Tutorial. Online resource available at: https://doc.arcgis.com/en/arcgis-online/reference/what-is-agol.htm
4. Publishing feature services using ArcGIS Online platform and interacting with the published service		*** Laboratory material/tutorials posted on the elearning UVT platform
5. Perform online spatial analysis (geocoding, driving distance calculation etc.) using ArcGIS Online platform		Fu, P., Sun, J., 2018. Web GIS Principles and Applications, ESRI Press, Redlands, California
6. Developing a web application using and ArcGIS platform		ArcGIS Online Tutorial. Online resource available at: https://doc.arcgis.com/en/arcgis-online/reference/what-is-agol.htm
9. Individual project / project assistance	Individual work, practical application, project presentation	The practical assignments are made individually by formulating problems that students will find solutions through spatial analysis in ArcGIS online.

Bibliography
Fu, P., Sun, J., 2018. Web GIS Principles and Applications, ESRI Press, Redlands, California
ArcGIS Online Tutorial. Online resource available at: https://doc.arcgis.com/en/arcgis-online/reference/what-is-agol.htm (last accessed 09.06.2016)
*** Laboratory material/tutorials/data posted on the elearning UVT platform.

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The bibliography for the student's projects will be chosen individually, depending on their specific.

7. **Corroborating course content with the expectations held by the representatives of the epistemic community, professional associations and typical employers in the field of the study programme**

The content of the course was developed in accordance with the curriculum and meets the didactic and scientific requirements corresponding to similar specializations from other universities. Course content will offer the students the necessary skills to start-up research projects leading to MSc Theses and to enroll in a PhD program. It stimulates the personal involvement of students in identifying problems that are suitable for spatial analysis and modelling in the GIS environment. It facilitates the initiation by students of contacts and possible collaborations with companies and institutions in the field of GIS. The softwares used in practical applications are one of the most modern and frequently used in specialized institutions.

8. **Assessment**

Type of activity	8.1 Assessment criteria	8.2 Assessment methods*	8.3 Weight in the final mark
8.4 Lecture	Active participation in answering the questions prepared at the end of each class	Continuous evaluation	20%
8.5 Seminar / laboratory	Assessment of practical tasks during the semester	Practical tasks evaluation	30%
	Quality of the project and presentation. Web applications developed during the semester project	Project evaluation	50%
8.6 Minimum performance standard			
• Minimum mark 5 at course evaluation. • Minimum mark 5 at practical activities.			

Date
16.01.2024

Course convenor's signature

Date of approval in the department

Head of department's signature
Lector univ. dr. Ioan-Sebastian JUCU

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