Subject code: GIS-526-2	**Subject name:** GIS Analysis and Geospatial Content Modeling		
Study cycle: II	**Year: I**	**Semester: I**	**ECTS credits:** 6
Status: elective		**Contact hours:** 60 Lectures: 30 Practical courses: 30	
Assigned professors and assistants:	Lecturers and assistants selected for the field to which the course belongs		
Prerequisits:	/		
Subject objectives:	- To acquire knowledge of contemporary trends in geospatial content modeling using GIS. - To understand the potential applications of multi-criteria GIS analyses in geospatial content modeling.		
Teaching units:	1. Spatial Data Management, GIS Analysis, and Modeling 2. Modern Trends in Geospatial Content Modeling - GIS Applications and Contributions 3. Using GIS for Urban Planning 4. Multicriteria GIS Modeling Techniques 5. Using Multicriteria GIS Analyses for Modeling Hydrological Processes 6. Multicriteria GIS Analyses for Climate Phenomena and Processes Modeling 7. Multicriteria GIS Analyses for Evaluating Industrial Site Suitability 8. First Examination 9. GIS Techniques for Analyzing Land Use Change 10. GIS Applications for Environmental Spatial Content Modeling 11. GIS Applications, Simulation Models, and Geovisualization Methods for Traffic Analysis 12. Using GIS and Remote Sensing for Vegetation Analysis and Modeling 13. Temporal GIS and Spatiotemporal Analysis 14. Designing Geodatabases: Case Study Approaches in GIS Data Modeling 15. Evaluation of Seminar Projects		
Learning outcomes:	**Knowledge:** - Student describes contemporary trends in geospatial content modeling. - Student explains the potential applications of GIS in geospatial content modeling. **Skills:**		

<table>
<tr><td></td><td>
- Student assesses the most optimal locations for the construction of geospatial content.
- Student relates physical-geographical and socio-geographical components of space to the locations of geospatial content.
Competencies:
- Student predicts and proposes the most optimal locations for geospatial content development using GIS.
</td></tr>
<tr><td>Teaching methods:</td><td></td></tr>
<tr><td>Knowledge testing methods with grading structure[1]:</td><td>
<table>
<tr><th></th><th>Maximum Points</th><th>Minimum points</th></tr>
<tr><td>Attendance</td><td>5</td><td>3</td></tr>
<tr><td>Participation on lectures</td><td>5</td><td>3</td></tr>
<tr><td>Homework, projects</td><td>50</td><td>27</td></tr>
<tr><td>Final exam</td><td>40</td><td>22</td></tr>
<tr><td>TOTAL</td><td>100</td><td>55</td></tr>
</table>
Assessment:
<table>
<tr><th>Grade</th><th>ECTS grade</th><th>Points scale</th></tr>
<tr><td>10</td><td>(A) excellent</td><td>95 - 100</td></tr>
<tr><td>9</td><td>(B) very good</td><td>85 - 94</td></tr>
<tr><td>8</td><td>(C) good</td><td>75 - 84</td></tr>
<tr><td>7</td><td>(D) satisfactory</td><td>66 - 74</td></tr>
<tr><td>6</td><td>(E) sufficient</td><td>55 - 64</td></tr>
<tr><td>5</td><td>(F, FX) insufficient</td><td>55</td></tr>
</table>
</td></tr>
<tr><td>Literature[2]:</td><td>
Mandatory:
1. Đug S., Dreško vić, N., Odžak, S. (2015) Daljinska istraživanja–principi i primjena u prirodnim naukama. Univerzitetski udžbenik. Univerzitet u Sarajevu. Sarajevo.
2. Goodchild, M.F., 2005. GIS and modeling overview. GIS, spatial analysis, and modeling. ESRI Press, Redlands, pp.1-18.
3. Reddy, G.O., 2018. Spatial data management, analysis, and modeling in GIS: principles and applications. Geospatial Technologies in Land Resources Mapping, Monitoring and Management, pp.127-142.
</td></tr>
</table>

[1] The structure of points and point criteria for each subject is determined by the Council of the organizational unit before the beginning of the academic year in which the subject is taught in accordance with Article 64, paragraph 6 of the Law on Higher Education of Sarajevo Canton

[2] The Senate of the higher education institution as an institution or a council of the organizational unit of the higher education institution as a public institution determines mandatory and recommended textbooks and manuals, as well as other recommended literature on the basis of which exams are prepared by a special act which is required to be published on its website before the beginning of the academic year in accordance with Article 56, paragraph 3 of the Law on Higher Education of the Sarajevo Canton.

4. Yeh, A.G., 1999. Urban planning and GIS. Geographical information systems

Recommended:

1. Rahman, M.R. and Lateh, H., 2017. Climate change in Bangladesh: a spatio-temporal analysis and simulation of recent temperature and rainfall data using GIS and time series analysis model. Theoretical and applied climatology
2. DeVantier, B.A. and Feldman, A.D., 1993. Review of GIS applications in hydrologic modeling. Journal of Water Resources Planning and Management, 119(2), pp.246-261.
3. Alijani, B., Ghohroudi, M. and Arabi, N., 2008. Developing a climate model for Iran using GIS. Theoretical and Applied Climatology
4. Bielecka, E., 2020. GIS spatial analysis modeling for land use change. A bibliometric analysis of the intellectual base and trends. Geosciences, 10(11), p.421.
5. Fedra, K., 1993. GIS and environmental modeling. Environmental modeling with GIS, pp.35-50.
6. Murray, A.T., 2010. Advances in location modeling: GIS linkages and contributions. Journal of geographical systems, 12, pp.335-354.
7. Wang, X., 2005. Integrating GIS, simulation models, and visualization in traffic impact analysis. Computers, Environment and Urban Systems, 29(4), pp.471-496.
8. Goodchild, M.F., 1994. Integrating GIS and remote sensing for vegetation analysis and modeling: methodological issues. Journal of Vegetation Science, 5(5), pp.615-626.
9. Yuan, M., 1996, January. Temporal GIS and spatio-temporal modeling. In Proceedings of Third International Conference Workshop on Integrating GIS and Environment Modeling, Santa Fe, NM (Vol. 33).
10. Arctur, D. and Zeiler, M., 2004. Designing Geodatabases: case studies in GIS data modeling. ESRI, Inc.