Subject code: G/105	**Subject name:** GIS in Contemporary Geographical Science		
Study cycle: III	**Year: I**	**Semester: I**	**ECTS credits:** 6
Status: Elective		**Contact hours:** 60 Lectures: 30 Research Seminar: 30	
Assigned professors and assistants:	Lecturers and assistants selected for the field to which the course belongs		
Prerequisits:			
Subject objectives:	• Introducing students to the applications of GIS in contemporary geographical research. • Practical work with advanced GIS software tools for component-based and complex research in physical geography, human geography, and regional geographical processes. • Familiarizing students with the application of various GIS models and tools in researching tourism potential and environmental protection. • Introducing students to the development of different GIS spatial models using predefined criteria, and, in this context, optimizing the use of spatial resources for various fields and levels of regional and spatial planning.		
Teaching units:	1. Content, Structure, and Methodological Concept of GIS Application in Contemporary Geographical Research. 2. GIS Applications – Structure, Organizational Models, User Levels. 3. GIS-Based Geodatabases – Concept, Structure, and Their Application in Contemporary Geographical Research. 4. Theoretical and Applied Foundations of Advanced GIS Models and Methods in Component-Based and Complex Research of Physical-Geographical Processes. 5. Theoretical and Applied Foundations of Advanced GIS Models and Methods in Component-Based and Complex Research of Human-Geographical Processes. 6. Theoretical and Applied Foundations of Spatial GIS Models and Existing Geodatabases in Contemporary Regional Geographical Research. 7. Theoretical and Applied Foundations of Advanced GIS Models and Tools in the Research, Identification, and Evaluation of Physical-Geographical Tourism Potential. 8. Theoretical and Applied Foundations of Advanced GIS		

	Models and Tools in the Research, Identification, and Evaluation of Human-Geographical Tourism Potential. 9. Theoretical and Applied Foundations of Advanced GIS Models and Tools in Contemporary Environmental Research. 10. Application of GIS in Geoecological Modeling. 11. Theoretical Foundations of Advanced GIS Models and Tools in Regional Spatial Research and Regional Development. 12. Application of GIS in the Development of Regional Spatial Models and Their Practical Evaluation. 13. Theoretical and Applied Foundations of Advanced GIS Models and Tools in Sectoral Spatial Planning Research and Thematic Cartography. 14. 3D Spatial Modeling and Its Application in Spatial Planning. 15. Predictive GIS Modeling of Geographical Processes.
Learning outcomes:	**Knowledge:** • The student defines and describes the content, structure, and methodological concept of GIS application in contemporary geographical research. • The student defines and describes GIS applications, their structure, organizational models, user levels, GIS-based geodatabases, and their application possibilities in modern geographical research. • The student provides examples of the theoretical and applied foundations of advanced GIS models and methods in component-based and complex research of physical-geographical and human-geographical processes. **Skills:** • The student identifies and locates spatial GIS models and existing geodatabases in contemporary regional geographical research. • The student identifies and utilizes advanced GIS models and tools in the research, identification, and evaluation of physical-geographical and human-geographical tourism potential. • The student recognizes and applies advanced GIS models and tools in contemporary environmental geographical research. **Competencies:** • The student applies GIS in geoecological modeling. • The student applies GIS in the development of regional

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<tr><td></td><td>spatial models and their practical evaluation.
• The student performs 3D spatial modeling and recognizes its applications in spatial planning.
• The student conducts predictive GIS modeling of geographical processes.</td></tr>
<tr><td>Teaching methods:</td><td>Multimedia presentation and discussion (lecture); independent student research and joint analysis (independent research project/seminar).</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>Oral Discourse</td><td>25</td><td>14</td></tr>
<tr><td>Practical Work</td><td>25</td><td>14</td></tr>
<tr><td>Independent Research Work</td><td>50</td><td>27</td></tr>
<tr><td>TOTAL</td><td>100</td><td>55</td></tr>
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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. Izdavač: Univerzitet u Sarajevu, Prirodno-matematički fakultet Sarajevo.
2. Heywood, I., Cornelius, S., Carver, S. (2006) An Introduction to Geographical Information Systems. Pearson Education Limited.
3. Fortheringham, A. S., Rogerson, P. A. (1994) Spatial Analysis and GIS. Technical Issues in Geographic Information Systems. Taylor and Francis. London.</td></tr>
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[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. ESRI (2009) ArcGIS 10. Using ArcGIS desktop. ESRI. Redlands. USA.