

Name of the course: Optimal Projections of Geographic Maps	Total credits: 6
Code: INFPHD162	
Type: lecture	
Total hours of per semester: 2 hours/week (15 weeks x 2h) lecture: 100% practice: consultation: Other:	
Type of testing: exam Other:	
Semester:	
Description	
Map distortions and distortion criteria. History of map projection optimization using calculus of variations (perspective projections with optimal distortion, Behrmann problem). The Euler–Lagrange differential equation and its application in the theory of map projections. Minimum distortion azimuthal, conic and cylindrical mappings of the sphere and the ellipsoid of revolution.	
Literature	
Compulsory Canter, F.: Small-Scale Map Projection Design. CRC Press, Boca Raton, 348 p., 2002, ISBN: 9780367578640 Recommended Bugayevskiy, L. M., Snyder, J. P.: Map Projections: A Reference Manual. CRC Press, Boca Raton, 328 p., 1995, ISBN: 9780748403042 Grafarend, E. W., Krumm F. W.: Map Projections: Cartographic Information Systems. Springer Berlin, Heidelberg, 714 p. 2006, ISBN: 9783540367024	
Knowledge	
- Possess the necessary research methodological skills for independent research in a given discipline/subject. - Knowledge of the general principles, rules and traditions of information technology and GIS. - Knowledge of the specific tools of the field of spatial computing, mastery of data management and analysis, understanding and effective application of cartographic representation in GIS environment; - Knowledge and use of spatial data collection technologies, their geospatial aspects and key elements.	
Competencies	
- Ability to design and implement new projects, conduct research in a given field, develop new techniques and approaches. - The ability to select the most effective GIS tools and software for the task in hand, depending on the complexity of the task.	

- Ability to process, evaluate, interpret and analyse data systematically using GIS and to support the drawing of conclusions from this data in GIS terms and to visualise them in an optimal way.
- With the acquired knowledge of spatial information and cartography, the PhD student is able to carry out planning, development and consultancy tasks in an efficient, user-oriented manner in the operation of GIS, decision support systems and expert systems.

Attitude

- - Have the interest and learning ability to keep abreast of the current state of the art in the field the identification and solution of unforeseen research problems in the field, which are currently not yet transparent.
- The acquisition of a geospatial approach will help to develop an appropriate attitude to professional cooperation with professionals working in related fields.

Autonomy and responsibility

- The PhD student develops and initiates new research areas within spatial computing and initiates new practical solutions with creative autonomy.
- Ability to act as an equal and discussion partner with professionals in the field.
- With his/her knowledge and skills in GIS, he/she is able to work responsibly with professionals from other disciplines.