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Course Instructor	Rachel Kuzmich	**Email**: rjw13@queensu.ca
Office	Macintosh-Corry Hall D117	
Contact Time	Two-hour lecture and two-hour lab per week	
Format	In person delivery – lectures, labs	
Class Assessment	Lab assignments 40% Reading reports 20% Project proposal presentation 5% Project progress report 5% Project poster 20% Class participation 10%	

COURSE OVERVIEW

This course extends the basic knowledge and skills of GIS covered in GPHY 243 by examining key concepts and methods related to spatial data management, operations, statistics, and visualization. It combines lectures with independent readings and a substantial practical component. Lectures cover theoretical and technical issues related to geodatabase design, network analysis, location-allocation modeling, spatial pattern analysis, geocomputing, classification, spatial statistics, among other topics. For the independent reading component, students will critically engage with academic literature in the spatial analysis discipline to gain a better understanding of current research. The practical component includes lab assignments and a project. Students will work primarily with ArcGIS, however other platforms (i.e., R, Google, QGIS) will be introduced. Lab assignments will have students solve spatial problems related to the lecture materials. The project requires students to apply geospatial methods for a more complex analysis of a real-world application.

LEARNING OUTCOMES

Those who successfully complete the course are able to:

- Lecture: Describe key concepts (i.e., topology) and methods (i.e., regression) related to spatial analysis
- Readings: Evaluate current spatial analysis research in the context of course topics
- Labs: Perform different functions and operations using tools in ArcGIS
- Project: Plan and implement a project by employing suitable methods and selecting appropriate tools

COURSE TOPICS

Geodatabase structure and design, topology, geometric networks, network analysis, location-allocation problem, spatial patterns and clusters, big data, geocomputing, spatial regression and statistical tools.

COURSE READINGS

Required weekly readings to support the lecture and lab material.
Recommended textbooks (e-books available via Queen's University Library):

- Longley, P.A., M.F. Goodchild, D.J. Maguire, D.W. Rhind. 2015. Geographic Information Science and Systems.
- Smith, M. J de, M. F. Goodchild, P.A. Longley. 2018. Geospatial analysis: a comprehensive Guide.