**Course Instructors**  
Dr. DongMei Chen  
Email: chendm@queensu.ca

**Offices**  
D125 Macintosh-Corry Hall

**Contact Time**  
Three-hour lecture and seminar  
Phone: 613-533-6045

**Format**  
Lectures, seminar, discussions, labs and a final project

**Class Assessment**  
- Lab report and reading assignments: 25%
- Final Exam: 20%
- Class discussion and presentation: 15%
- Final research project: 40%

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**COURSE OVERVIEW**
This course examines the scientific methods used to derive useful information from spatial data. Emphasis will be placed on different types of data analysis models (vector, raster, network, and surface) used in GIS and methodologies for integrating various spatial analysis and modeling techniques with GIS for environmental/urban/social-economic/health applications (e.g., watershed and hydrology analysis, land use/cover classification, dynamic urban growth models, location-allocation models, health service). Practical applications and theoretical/technical aspects of related issues will be introduced and discussed. Students are required to read papers and develop a research project.

**LEARNING OUTCOMES**
Those who successfully complete the course are able to
- Understand the different data formats/structures and their corresponding analysis functions and methods in GIS.
- Be able to use the model builder to organize various functions and working flows for a GIS project.
- Select and run appropriate functions and extensions for an application.
- Have a basic understanding on uncertainty, MAUP and other issues of spatial data and analysis.

**COURSE TOPICS**
Spatial data, information, GIS, spatial sampling and interpolation, exploratory data analysis, spatial statistics, spatial regression, location-allocation modeling, uncertainty and error modeling, dynamic modeling, MAUP, ecological and environmental modeling, etc.

**COURSE READINGS**


