SURP 881 – GIS in Urban Planning  
Fall Term, 2019

Location: GIS Lab, Mackintosh-Corry Hall Room E223
Day/time: Mondays, 6 p.m. to 8:50 p.m.
Instructor: Sukriti Agarwal, MCIP, RPP  
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Office Hours: By appointment if necessary
Enrollment Limit: 22 students

OVERVIEW

This graduate-level course intends to introduce students to geographic information systems (GIS) and their use in the field of urban planning. The course features hands-on use of the software for creating, displaying, manipulating, and analyzing spatial data. Lab sessions use ArcGIS from ESRI. This course assumes that students have a basic knowledge of windows operating systems. Although students will not be GIS experts by the end of the course, they will have gained the necessary skills and knowledge to construct maps and perform analysis which can be used in a variety of planning settings.

COURSE STRUCTURE

The course is given in a three-hour once-a-week format. Class will consist of a mixture of lectures on the principles of GIS and spatial data, demonstrations of GIS processes, and in-class lab exercises.

Below is a tentative course outline and will likely change based on the skills and abilities of the students enrolled in the course.

- **Week 1: September 9**  
**Overview of the Course**
  - What is GIS
  - Vector and Raster Data Formats
  - Map Projections

  *Lab: Hands-on practice to build familiarity with ArcMap*

- **Week 2: September 16**  
**GIS Basics**
  - Map layers
  - Zoom and Pan
  - Measure Distances
  - Types of Features – points, lines, polygons
  - Identifying Features
  - Attribute Tables
  - Orthophotos

  *Lab: Making your first map (Assignment 1)*

*Read: Elements of GIS  
  Mapping and Visualization*
- **Week 3: September 23**  
  *Map Design Overview / GIS Outputs*  
  - Print Layouts  
  - Map Layers  
  - Colours  
  - Labelling  
  - Legend  
  - Compass/Scale  
  - Title  
  - Export layouts  
  *Lab: Base Map of Kingston showing city boundary, streets, etc. (Assignment 2)*
  **Assignment 1 due**

- **Week 4: September 30**  
  *Census Geography*  
  - Data Sources  
  - Map types  
  *Lab: Census map for Kingston, joining census data to map (continued from previous lab)*

- **Week 5: October 7**  
  *Geocoding*  
  *Lab: Geocoding (Assignment 3)*  
  **Assignment 2 due**

- **Week 6: October 14**  
  *Thanksgiving – No Class*

- **Week 7: October 21**  
  *Digitizing Data (creating new data)*  
  - Creating points, lines, polygons  
  - Adding attribute data  
  *Lab: Digitizing (Assignment 4)*  
  *Read:*  
  An overview of editing and data compilation  
  **Assignment 3 due**

- **Week 8: October 28**  
  *Attribute selection*  
  - Selection by Location  
  - Selection by Attribute Query  
  - Extract features to create a new shapefile  
  *Lab: Digitizing (continued from previous lab)*  
  *Read:*  
  Selecting Graphics  
  Selecting Features Interactively  
  Selecting by Location  
  **Assignment 4 due**

- **Week 9: November 4**  
  *Geoprocessing*  
  - Clip  
  - Dissolve  
  - Union  
  - Intersect  
  - Append  
  *Lab: Geoprocessing (Assignment 5)*
Read: Geoprocessing
Commonly used tools

- Week 10: November 11
  Geodatabases
  Spatial Analysis
  - Creating buffers
  - Site suitability analysis

Lab: Geoprocessing (continued from previous lab)
Assignment 5 due

- Week 11: November 18
  Lab only: Course project work in class

- Week 12: November 25
  Lab only: Course project work in class

GRADING

Course progress will be evaluated using the following criteria:

- Participation in discussions and in-class lab work 10%
- Evaluation of assignments (5) 50%
- Final project demonstrating an understanding of the course 40%

All assignments will require some analysis using ArcGIS and it is expected that students will hand in their assignments as Microsoft Word documents with the appropriate output from GIS and other packages integrated into their documents. At times, students may find it necessary to utilize Excel or other programs. Assistance with these packages will be provided as necessary.

Policy on late assignments

It is very important that students keep up with the pace of course assignments. If, for some reason, you must turn in an assignment late, notify the instructor immediately by email. The penalty for late assignments is set at 10% for the first day, 20% for days 2-5. They will not be accepted after Friday of the following week.

ArcGIS SOFTWARE
The ArcGIS software is available for download at no charge for students from the Software Centre at MyQueen’sU:
http://www.queensu.ca/its/software/enterprise-licenced-software/arcgis

COURSE FEES

GIS Lab Access Card Fee $40 (Refundable at the end of the course)

COURSE READINGS

Students should focus on material presented in lectures and lab sessions. Readings will be provided via onQ or QShare. The software manuals for ArcGIS are available in PDF format. As the course proceeds, some course topics may be supplemented by a reading list of supplementary material that includes both web and print based resources.