I. Course Overview
This class *introduces* the types of quantitative data/information and numbers that urban, regional/provincial and community planners, policymakers, practitioners, and activists most often engage with when making decisions and taking action. Numbers are powerful, useful and will likely be part of your career in some way. This course is designed to give you confidence working with them.

This is *not* a lecture or discussion-based course with a long academic paper or formal exam. This is *not* a theory class. This is a primarily a technical skills-building class: an *action-based, “lab” course*. We will primarily *learn by doing*, through constant application of concepts through hands-on learning. You will make mistakes. You will work together and learn together. You will regularly present your work. It will be messy. Most of all, I also hope it will be fun, and that the course will encourage you to take further, in-depth methods courses during your studies.

The class is organized into four distinct modules, effectively four miniature courses in one. Each three-week module covers a specific domain: GIS, finance/budgeting, economics, and statistics. You may use all of these analytical methods in your post-grad school career. It is possible you will use none at all. Regardless, after this course, you will have a basic understanding of how numbers can be used by planners to affect the collective life of communities.

II. Course Goals
This course is designed to build both technical skills working with numbers, as well as professional-level oral presentation skills.

**A. Technical Skill Goals**
By the end of this course, you should be able to:

- Utilize GIS to make reference and thematic maps and manipulate/analyze spatial data.
- Calculate cash flows, net present values, rates of returns, capitalization rates, and understand debt and equity for commercial property investments and land.
- Evaluate balance sheets, budgets, and understand sources/uses of funds (taxes, fees/levies, bonds) in cities.
- Understand how interest rates and financial markets affect municipal finance and urban land.
- Create an economic and demographic profile of a neighborhood, city, or region.
- Evaluate an economic impact analysis.
- Critique and understand supply and demand-based economic analyses for urban planning, including various ways to determine costs, benefits, and prices.
- Perform and interpret basic statistical analyses, such as correlation, covariance, and OLS regressions, as well as understand some spatial statistics.

B. Oral/Presentation Skill Goals

Through frequent brief presentations of your group and individual psets, the class provides many opportunities for students to work on their oral presentation skills. Learning to speak publicly and make brief, effective presentations are a critical part of any urban planner’s toolkit.

III. Module Structure

Each module is structured the same way: we begin with some introductory tasks, gaining fluency through the individual in-class exercise. In the second week of each module, we move into topics and concepts which build on the introduction week, and students complete an individual problem set. In the third week, we cover more intermediate/advanced methods and tools, and students complete a group problem set which is cumulative for the module. You will be randomly assigned by the instructor to a different group for every group assignment.

A. Weekly Class Meeting - Structure:

Most weeks, our three hours of class time from 10AM – 1 PM will be split into three parts. The times are approximate, and may be adjusted depending on our progress week to week.

1. Prior Week’s Assignment Review and Discussion. 10 AM to ~11 AM.

   During the first part of class, we will review the prior week’s assignment together through student presentations of their answers, and instructor and class feedback and questions. All students who have submitted an assignment the prior week are expected to be present in class for this hour.

2. Instruction and Lab Time -- New Material. ~11 AM to ~Noon. The second part of the class is a working instructive “lab” session, in which you will work individually, following along with the instructor and TA, on new material.

3. Work Lab, Individual or Group Pset Working Time. ~Noon to 1 pm. The individual or group assignment for the class will be released at noon on Mondays. For the final third part of class time, students will be able to work on this assignment independently and get help from the Instructor and the TA one-on-one. In weeks where there is no individual or group pset, but rather just a take-home exercise, students may elect to use this hour to finish the exercise.
If you have prior background or training in one of the module areas and feel confident that you understand the material and do not need either the second part instruction time or the third part completion time for the in-class assignment or work on the pset, you are free to leave class without penalty!

B. Course Schedule Outline

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Assignments</th>
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<tbody>
<tr>
<td>1/7</td>
<td>GIS I: Reference/Base and Land Use Maps</td>
<td>Exercise</td>
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<tr>
<td>1/14</td>
<td>GIS II: Thematic Maps: Choropleth, Dot Density + More (Joins)</td>
<td>Individual</td>
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<tr>
<td>1/21</td>
<td>GIS III: Spatial Data Functions: Clip, Buffer, + More</td>
<td>Group</td>
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<tr>
<td>1/28</td>
<td>Fin/Budgets I: Debt/Equity, Interest Rates, Returns</td>
<td>Exercise</td>
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<tr>
<td>2/4</td>
<td>Fin/Budgets II: Cash Flows and Valuations for Land/Property</td>
<td>Individual</td>
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<tr>
<td>2/11</td>
<td>Fin/Budgets III: Municipal and Project Budgets/Finance</td>
<td>Group</td>
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<tr>
<td>2/18</td>
<td>Family Day/Reading Week – No Class or Office Hours</td>
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<tr>
<td>2/25</td>
<td>Econ I: Local Eco/Demo Data Analysis, Pop Projections</td>
<td>Exercise</td>
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<td>3/4</td>
<td>Econ II: Location Quotients, Shift-Share, Impact Studies/Multipliers</td>
<td>Individual</td>
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<tr>
<td>3/11</td>
<td>Econ III: Supply/Demand, Pricing and Externalities of Public Goods</td>
<td>Group</td>
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<tr>
<td>3/18</td>
<td>Stats I: Central Tendencies, Distributions, Variance, Covariance</td>
<td>Exercise</td>
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<tr>
<td>3/25</td>
<td>Stats II: Intro Regression</td>
<td>Individual</td>
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<tr>
<td>4/1</td>
<td>Stats III: Intermediate Regression, Intro Spatial Stats</td>
<td>Group</td>
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IV. Marking and Evaluation

The course is designed around four modules, and your mark will be based on the number of individual exercises and problem sets (psets) and group psets you complete satisfactorily in each module. There is one of each of these three types of assignments per module, which means there is an assignment every week. To receive a passing mark for the course, students must complete the group pset for each module, and at least half of the individual psets and in-class exercises. If a student does not do so, they will not pass the class.

Everyone can pass this class. If you put in the time and effort, everyone can even get an A, because this is a “choose your own grade” course based on a “contract grading” scheme. My contract with you is that if you satisfactorily complete the number of assignments of each type below, you will receive the grade specified below.

Why am I marking you this way? It’s easy to get focused on the minutiae of a half-point being deducted here or there. By using this grading scheme, I want to encourage you to focus on learning by doing, and I want to encourage you to feel free to make mistakes as you try to learn.

<table>
<thead>
<tr>
<th>Course Grade</th>
<th>In-Class/Take Home Exercise</th>
<th>Individual Problem Sets</th>
<th>Group Problem Sets</th>
<th>Bonus Questions</th>
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<tr>
<td>A+</td>
<td>4</td>
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What constitutes a satisfactory assignment? A “satisfactory” assignment is one in which a student has made a good-faith attempt to use the analytical tools and concepts to produce complete answers to all questions. I will tell you in class each week if there are specific components to each assignment that absolutely must be present to receive full credit. If you are missing full credit elements, I will return the assignment to you, and ask for a resubmission if you wish to receive credit.

Assignment Type Detail

1. **Group Problem Sets** include two components, written and oral. These assignments may be cumulative and cover concepts reviewed in the prior two weeks, as well, depending on the module. The written assignments are due on **Fridays at midnight**. There will also be an oral presentation in class of your answers, the Monday after they are due. This oral review must be accompanied by a five-minute power-point style visual exhibit, in which you review and present your work. If you are not in class for the oral presentation, you will not receive any credit for the group assignment. You must complete all four group psets to pass the class. I will also survey team members after each group pset to affirm that everyone in the group made an adequate contribution! If two or more members of your group state that you did not make a sufficient contribution, you will not receive credit for the assignment and a timed, individual make-up exam will be assigned. Group assignments will be released to students in class the week they are due.

2. **Individual Problem Sets** are structured identically to the group psets, with a written and oral component. The written component is to be completed individually and is due **Friday at midnight**. A random sample of between 4 and 8 students will be randomly selected to orally present their answers in class the Monday after they are due. No powerpoint-style visual is necessary. As with the group assignment, if you are randomly selected to present your assignment in class and are not present, you will not receive any credit for the assignment.

3. **In-class Exercises** are “lab” assignments we will begin during class instructional time, but that you may finish on your own time if you are not done at the end of the lab period. They are due **Fridays at midnight**. A random sample of between 4 and 8 students will be randomly selected to orally present their answers in class the Monday after they are due. No powerpoint-style visual is necessary. As with the group and individual pset assignments, if you are randomly selected to present your assignment in class and are not present, you will not receive any credit for the assignment.

4. **Bonus Questions** are additional, optional questions I will include on some assignments as a way for you to challenge yourself.
Lateness, Extensions and Accessibility Services: Late assignments are not accepted. Extensions are granted for documented medical/emergency situations, or for documented accessibility needs. If any student in the class anticipates that they might utilize Accessibility Services, please let the Instructor know as soon as possible so that reasonable accommodation can be made. Please consult https://www.studentlife.utoronto.ca/as for further information.

Plagiarism. Quoting or paraphrasing others’ work without citation constitute plagiarism. This is an academic offense at the University of Toronto. Students should not submit academic work completed for other classes before consulting with the Instructor. Please see “Rules and Regulations”, Arts and Science Calendar (www.artsandscience.utoronto.ca/ofr/calendar/rules.htm) and the ‘How Not to Plagiarize’ website (http://www.writing.utoronto.ca/advice/using-sources/how-not-to-plagiarize.)

A Note on Communication. Email to the instructor and TA is to be used sparingly, and to ask simple yes, no, or short answer questions. Please send all emails to both the instructor and the teaching assistant. We will try to respond to emails within 48 hours. For questions or issues requiring more than a simple yes or no answer, please come to office hours. Use of office hours is strongly encouraged! Use my Doodle poll link at the top of the syllabus to come see me!

V. Detailed Course Schedule
Subject to Revision through 1/14

Module 1. GIS – Spatial Data Manipulation and Mapping

January 7. The basics: how to make a reference and land use map.

Assignment: In-class/take-home exercise, due Friday January 11. Present in class 1/14.

January 14. Thematic maps with spatial joins: choropleth to dot density maps and beyond.


Optional Spreadsheets and Data Workshop with Nathan Stewart: Tuesday, 1/15, 4 pm.


Assignment: Group pset, due Friday January 25. Present in class 1/28.

Module 2. Finance – Cash Flows, Values, Debt/Equity and Budgeting

January 28. The basics: understanding debt and equity, interest rates, rates of return.

Assignment: In-class exercise, due Friday, February 1. Present in class 2/4.

February 4. Commercial property and land values, cash flows, and mortgages.

Assignment: Individual pset, due Friday, February 8. Present in class 2/11.

February 11. Municipal finance and budgeting, transportation/capital investment and finance.

Assignment: Group pset, due Friday, February 15, present in class 2/25.
Mid-term break: Family Day Holiday, February 18

Module 3: Economics: Economic and Demographic Data, Supply/Demand and Markets

February 25. Demographic analysis of neighborhoods, cities and regions; population projections.

   Assignment: In-class, take-home exercise, due Friday, March 1. Present in class 3/4.

March 4. Regional economic analysis and industrial structure: location quotients, shift shares, economic impact studies (input-output analysis and multipliers).


   Assignment: Group pset, due Friday, March 15. Present in class 3/18.

Module 4: Statistics for Planners


   Assignment: In-class, take-home exercise, due Friday, March 22. Present in class 3/25.

March 25. Regression I: bi-variate/OLS.

   Assignment: Individual pset, due Friday, March 29. Present in class 4/1.

April 1. Regression II: intermediate/advanced regression topics and spatial statistics.

   Assignment: Group pset, due Friday, April 5. NO PRESENTATIONS!