School of Planning
Faculty of Environment
University of Waterloo

PLAN 320 / GEOG 319

Economic Analyses for Regional Planning

Fall Term, 2016
Lecture: Wednesday 10:30-12:20 E2 1303
Lab: Wednesday 12:30-1:20 E2 1310

Instructor:
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Teaching assistant:
Christopher DeGeer

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COURSE OUTLINE

Calendar Description

Practical application and critical appraisal of regional analysis techniques used by planners, economic developers and consultants. Problem based approaches to understanding the strength and leverage of business and industrial sectors, projection and forecasting, employment and demographic trends, investment decision-making and cost benefit analysis.

Introduction

An integral part of planning for regions and municipalities involves contributing to the decision-making process through the use of analytical tools and approaches. Practicing planners and economic development officials in municipal and regional government, policy branches of senior governments, and in private sector consulting firms are often called upon to (1) identify the economic strengths of a region; (2) compare regional economic characteristics; (3) forecast employment and population; (4) explore land development demands; (5) estimate fiscal impacts of developments; and (6) provide cost/benefit analysis. This course explores and provides practical examples of the application of regional analysis methods used by consultants and governments to tackle these demands. A strong emphasis is placed on using local data and traditional approaches. This is a one-term course with credit weight 0.5.

Course Objectives

The course provides individual opportunity, through assignments, to apply important methods actually used by practicing planners with the aim of students developing the ability to apply these methods by themselves. In addition to developing their technical skills, there is a focus on developing their abilities to critically interpret the results of their analysis and expanding their appreciation of the strengths and weaknesses of the various approaches. It is important to generate results, but is imperative to be able to explain and defend them.

Learning Modes

All theory and assumptions of the methods and the outline of approaches will be presented, demonstrated, and evaluated in lectures. The course materials (lecture slides, assignments, discussion forums) will be available on the course website. A referred text book is chosen to provide the basic concepts of the materials covered in this course. All other reading materials will be available on the course website, if required.

Students learn the methods presented in this course best by practice in applying them using real data. Thus, the course assignments are very important to student success. Students practice the key methods in individual assignments based on previous examples given at tutorial sessions. While the scope of the assignments is narrower than you may encounter in practical applications, the methods covered in the class can be applied to broader-scale projects. Assignments balance the technical demands of applying the methods with the challenging demands of interpretation and critical evaluation. Therefore, your writing skills are as important as your technical skills.

SCHEDULES

Class Structure

Please see top of page for class location and time. A two-hour lecture (with some interactive exercises when possible) is followed by a one-hour computer lab tutorial session. You need to attend both in order to be prepared to complete the course assignments and exams. The lab has proven very helpful for students to gain an understanding of methods and to prepare to do the assignment. *Please note that we are using the engineering lab with special permission.* ***Absolutely no food or drink is allowed in that lab****. They are very strict on this point.*

Scheduled Office Hours or Consulting (T.A. and Professor)

Open lines of communication are an important part of a good course experience. The office hours for both the TA and the Professor are posted at the beginning on the course outline. Please visit during the office hours; that is why we have them.

Email is generally the best way to reach the Professor and TAs, and potentially the quickest way to get an answer to any question. **When Emailing, please USE YOUR UW E-MAIL ADDRESS, and include the course number (PLAN 320) in your subject line, and we will respond as soon as possible**. Using the university email address and appropriate subject line helps to prioritize responses to student e-mails and easily access your previous e-mails. Feel free to email the TAs individually with questions.

In addition, we have **discussion forums** set up in Learn, where you can post your questions. The TAs will respond to the questions at their earliest convenience. This also gives an opportunity to get help from other fellow students.

Topic Schedule

This schedule is a guide to course topics. We may make minor adjustments from time to time. If any adjustments are made, this outline will be updated, and the updated copy will be posted in Learn. Check the date in the file name for the most recent version.

Weeks	Topic
Week 1 (Sept. 14)	Introduction: • Introductory discussion of regional science, economics, and planning • Discussion of analytical approaches • Perspective: What is economics? *Lab Session: Brainstorming session: PPS: "Long-term Economic Prosperity"*
Week 2 (Sept. 21)	Introduction to Demography: • Region and the elements of region • Demography and population dynamics • Population projection method: Cohort Projection *Lab Session: Cohort projection*
Week 3 (Sept. 28)	• Demography and population dynamics (continued) • Statistical population projection and forecasting **Assignment 1** (Cohort projections) due 10:30 AM *Lab Session: Regression-based demographic trend projections*
Week 4 (Oct. 5)	• Introduction to economic basics: Market actors • Economic basics: Demand and supply **Assignment 2** (Population trend projections) due 10:30 AM *Lab Session: Demand and supply shifters Regression-based demand curve estimates using Excel.*
Week 5 (Oct. 14)	Economic basics (Continued): • Understanding markets and their dynamics • Market equilibrium and welfare measures **Assignment 3** (Demand curve estimates/ demand and supply shifters) due 10:30 AM *Lab Session: Market equilibrium using Excel*
Week 6 (Oct. 19)	Introduction to analysis of the regional economy: • Employment change - Location Quotients - Shift Share – Carvalho Scale • What is the region's comparative advantage? **Assignment 4** (Market equilibrium calculation and analysis) due 10:30 AM *Lab Session: Employment change and location quotients*
Week 7 (Oct. 26)	• Comparative Advantage (Continued). • Short midterm review (if time allows). **Assignment 5** (Employment change and location quotients) due 10:30 AM *Lab Session: Shift-share calculations*
Week 8 (Nov. 2)	**In-class Midterm Exam** (through Week 5 lectures and Assignment 4) It will not be stressful if you have kept up in the class! *No lab session on this day*
Week 9 (Nov. 9)	Introduction to Cost/Benefit analysis (CBA): • Market and non-market values; discounting and present value **Assignment 6** (Shift-Share/Carvahlo) due 10:30 AM *Lab Session: Discounting and present value in Excel*

Week 10 (Nov. 16)	• CBA (Continued). **Assignment 7** (discounting and present value) due 10:30 AM *Lab Session: Cost-Benefit Analysis in Excel*
Week 11 (Nov. 23)	• Introduction to linear programming (LP) • Basic principles of optimization and decision making using simple linear programming solutions (LP) **Assignment 8** (Cost-benefit analysis) due, 10:30 AM *Lab Session: Formulating constraints and using Solver in Excel (linear programming).*
Week 12 (Nov. 30)	• Regional economic impacts and planning issues • Review **Assignment 9** (Land development analysis using linear programming) due **10:30 AM, MONDAY, DEC 7**. (Note: Delayed due date) *Lab Session: Additional help with LP assignment (as needed)*

Student Participation and Evaluation

Assignment/Exam Evaluation Weights

Activity	Date	Details	Evaluation weight
Class Participation		Class participation will be in the form of class attendance, in-class-group works, in-class quizzes, class discussions, and lab attendance.	5%
Assignments	See weekly schedule, above	Provided that you obtain a passing mark on all 9 assignments, your lowest mark will be dropped. If you obtain less than 50% on any one assignment, all assignments will be used in calculating your final marks for this category.	60%
In-class midterm	Week 8 (October 29)	This will be a fairly simple exam, no computer work, based on the first 5 weeks of course content.	15%

Final Exam	Week 12 (Due Thurs. Dec. 15th at 1:30 PM)	This is a take-home final. It will be made available in Learn by Dec. 8th, 1:30 PM. I will answer any clarification questions as needed, making answers available to all students. Turn in to the Learn dropbox by 1:30 PM on Wed. A hard copy of your final exam must also be turned in to the Planning dropbox at that time. You can mail the hard copy to us, provided it reaches us by the due date. You must sign the included "assignment checklist," which will appear at the front of the exam, to ensure that you have followed all exam guidelines	20%

IMPORTANT NOTES:

- **_Assignment Submission:_**
    - All assignments are due at the beginning of each class (i.e., by 10:30 AM on Wednesdays, before class)
    - All assignments must be submitted electronically and in hard copy by the due date.
    - You must submit both the written response and the excel workbook electronically. Both the documents will be used for marking.
    - The word processed document must be a stand-alone report that includes relevant information, charts, and tables from excel workbook.
    - You don't need to print out the excel workbook.
    - The word processed document (i.e., the written response) should be submitted in .PDF format, and the excel workbook in .xml format.
    - Name your documents following the suggested protocol: 'LastName_PLAN320_AssignmentNo" (e.g., Harun_PLAN320_A1).

    *Your assignment will not be marked until/unless we receive a printed copy. **Even if your assignment is turned in on time in the electronic dropbox, it will not be marked and you will receive no credit if you do not turn in a paper copy within seven calendar days. Any hard copy submission after seven calendar days will not be marked.***

- **_Final Exam Submission:_**
    - Both the written response of your final exam and the excel workbook must be submitted in LEARN electronically and in hard copy by the due date.
    - The written response should be a stand- alone document. Thus, include relevant information, tables, and graphs from the excel workbook.
    - You don't need to print out the excel workbook.
    - Submit the written response in .PDF format and the excel workbook in .xml format in LEARN. (Both the documents will be used to mark the exam)
    - Drop your exam paper in the physical dropbox at the School of Planning, located in the 3rd floor of Environment 3.

    No late submission of the final exam is allowed. You must submit the hard copy

There is no doubt that this is a challenging course. However, if you attend lectures, diligently complete the homework assignments, review errors on assignments to see where you went wrong, and consult with your instructional team (myself and the TAs) as needed, you should do well in the class. Students in previous years have really risen to the challenge, and have been happy to have mastered the technical content.

Although we have relatively short assignments due almost every week, the class is structured to allow for some natural variation in productivity (by dropping the lowest grade of completed homework assignments if you earn a passing mark, leaving more lead time for relatively more difficult assignments, and having a take-home final exam. When determining the distribution of final marks for the course, I will examine the pattern of performance of the class as a whole, and I may make Pareto-improving adjustments in course marks, applying the same criteria to all students. However, in my courses, generally final marks are not adjusted.

Requirements, Grade Penalties and Special Considerations:

- Readability, Clarity, and Collaboration: You are welcome (and encouraged) to form study groups to work on homework assignments. However, each student must turn in independently completed, well organized and properly written work, both excel files as required and written work. Written responses must be properly formatted and written effectively. Given the prominence of the assignments in determining your final grade, each assignment should be treated as a "report". Absolutely no collaboration is allowed for the take-home final exam.
- Participation: Class participation marks will be given based on class and lab attendance, class discussion, in-class group works, in-class quizzes, and participation in on-line discussion forums. If you are unable to attend any class, please inform the professor and the TAs in advance or as soon as possible. There will be questions on homeworks and exams that follow up on course discussions, and in-class activities. So, your participation will pay off.
- Computer Use: Assignments must be word processed, including equations and calculations, if required. Please carefully check spelling and grammar and follow suggested word limits.
- Lateness penalty: All homework assignments are due on the date and time set by the professor. Late assignments incur a 10% (of total possible points) penalty for each late day. Since assignments will generally be returned the week after they are turned in, no assignments will be accepted more than 7 days late. These assignments will receive a grade of zero. Late assignments will be graded as the schedules of the TAs allow, but not necessarily the following week. **The LEARN dropbox turn-in time is the official turn-in time for all assignments.** In case of LEARN failure, alternative arrangements will be made.
- Late take-home final exams: **Because we have a very short turn-around time to grade the final exam, late final exams will not be accepted**. You have a good block of time to complete this exam; plan accordingly. If you will be turning the exam in from off-campus, make sure that you arrange to turn in a hard copy. We cannot print your exam.
- Requests for exemptions or compassionate considerations: are to be discussed with the professor in advance or as soon as possible. **If you are ill or injured, please obtain documentation from a doctor**, and we will have no problem adjusting your schedule as appropriate. If you are ill (have a fever or other symptoms that don't allow you to concentrate), please see a doctor and take a break, rather than turn in work that might be below your potential. If you have a personal or family emergency, please speak to myself and your undergraduate coordinator, and see the information about counseling services below for additional support.
- Assignment Grades will be posted in LEARN. Please monitor your grades before you turn in your take-home final for accuracy and completeness. Both the TAs and myself strive to use objective and consistent criteria to grade all assignments. If you feel that an error has been

made in the grading of your assignment, provide all of us with a written request for reconsideration, along with a copy of the assignment in question. We will reevaluate the assignment. However, we reserve the right to adjust your grade either upward or downward as a result of the revaluation.

- Final Grades will be calculated off-line. Therefore, your final grade may not be available on LEARN. Grades will be available no earlier than Dec. 23.

Readings:

Required texts

Hackett, S. C. 2011. *Environmental and Natural Resource Economics: Theory, Policy, and the Sustainable Society.* 4th edition, Routledge, New York, NY

Additional texts

Tietenberg, Tom & Lewis, Lynne. 2015. *Environmental and Natural Resource Economics.* 10th edition, Pearson Education, Inc, New Jersey

We will also use readings from the Web Book of Regional Science (http://rri.wvu.edu/web_book)

Additional supporting, recommended, and supplementary readings will be provided as we proceed through the course and where possible, made available on the course website. In some cases, links will be provided for articles that can be accessed through the UW library site or a UW URL.

Computer use:

Please make sure that your Nexus account is activated before the first lab. This course makes extensive use of computer spread-sheet applications. The instructor assumes that students are able to use, on their own, the "Excel" spread-sheet system on the computers in the Mapping, Analysis and Design (MAD) student computer lab. Of course, students are welcome to use their own computers in course assignments. Students with Mac computers may not be able to install the Solver add on, but an alternative is available.

Materials for assignments will be made available through the course website. Plagiarism detection software (Turnitin) will be used to screen assignments in this course. This is being done to verify that use of all materials and sources in assignments is documented. Students will be given an option if they do not want to have their assignment screened by Turnitin. In the first week of the term, details will be provided about arrangements and alternatives for the use of Turnitin in this course. (see Turnitin Guidelines for Instructors: http://uwaterloo.ca/academicintegrity/Turnitin/guidelines.html)

Additional information:

- **Unclaimed Assignments:** Any unclaimed assignment will be retained for one month after grades become official in quest. After the period, all unclaimed assignments will be destroyed in compliance with UW's confidential shredding procedures.

Academic Integrity: All students are expected to be aware of what constitutes academic integrity and should demonstrate academic integrity in their work. Students who are unsure what constitutes an academic offence are requested to visit the on-line tutorial at http://www.lib.uwaterloo.ca/ait/. Please read the information in the following box carefully.

Consequences of Academic Offences:

In order to maintain a culture of academic integrity, members of the University community are expected to promote honesty, trust, fairness, respect and responsibility. The Univesity's guiding principles on academic integrity can be found here:
http://uwaterloo.ca/academicintegrity/

All students are strongly encouraged to review the material provided by the university's Academic Integrity Office, specifically for students:
http://uwaterloo.ca/academicintegrity/Students/index.html

A student is expected to know what constitutes academic integrity, to avoid committing academic offenses, and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offense, or who needs help in learning how to avoid offenses (e.g., plagiarism, cheating) or about "rules" for group work/collaboration should seek guidance from the course professor, academic advisor, or the Undergraduate Associate Dean. Students may also visit the following webpage:
https://uwaterloo.ca/library/get-assignment-and-research/help/academic-integrity/academic integrity-tutorial

When misconduct has been found to have occurred, disciplinary penalties will be imposed under Policy 71 – Student Discipline. For information on categories of offenses and types of penalties, students should refer to Policy 71 - Student Discipline,
http://www.adm.uwaterloo.ca/infosec/Policies/policy71.htm

Within ENV, those committing academic offences (e.g. cheating, plagiarism) will be placed on disciplinary probation and will be subject to penalties which may include a grade of 0 on affected course elements, 0 on the course, suspension, and expulsion.

Students who believe that they have been wrongfully or unjustly penalized have the right to grieve; refer to Policy #70, Student Grievance, http://www.adm.uwaterloo.ca/infosec/Policies/policy70.htm

- ♦ **Research Ethics :** Please also note that the 'University of Waterloo requires all research conducted by its students, staff, and faculty which involves humans as participants to undergo prior ethics review and clearance through the Director, Office of Human Research and Animal Care (Office). The ethics review and clearance processes are intended to ensure that projects comply with the Office's Guidelines for Research with Human Participants (Guidelines) as well as those of provincial and federal agencies, and that the safety, rights and welfare of participants are adequately protected. The Guidelines inform researchers about ethical issues and procedures which are of concern when conducting research with humans (e.g. confidentiality, risks and benefits, informed consent process, etc.). If the development of your research proposal consists of research that involves humans as participants, the please contact the course instructor for guidance and see https://uwaterloo.ca/research/office-research-ethics

- ♦ **Note for students with disabilities:** Accessibility Services, located in Needles Hall, Room 1401, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require

academic accommodations to lessen the impact of your disability, please register with the Accessibility Services at the beginning of each academic term.

♦ **Mental Health:** The University of Waterloo, the Faculty of Environment and our Departments consider students' well-being to be extremely important. We recognize that throughout the term students may face health challenges - physical and / or emotional. **Please note that help is available**. Mental health is a serious issue for everyone and can affect your ability to do your best work. Counselling Services (www.uwaterloo.ca/counselling-services) is an inclusive, non-judgmental, and confidential space for anyone to seek support. They offer confidential counselling for a variety of areas including anxiety, stress management, depression, grief, substance use, sexuality, relationship issues, and much more.

♦ **Religious Observances:** Please inform the instructor at the beginning of term if special accommodation needs to be made for religious observances that are not otherwise accounted for in the scheduling of classes and assignments.

♦ **Grievance:** A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read Policy 70 - Student Petitions and Grievances, Section 4, https://uwaterloo.ca/secretariat-general-counsel/policies-procedures-guidelines/policy-70. When in doubt please contact your Undergraduate Advisor for details.

♦ **Appeals:** A decision made or penalty imposed under Policy 70 - Student Petitions and Grievances (other than a petition) or Policy 71 – (Student Discipline) may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to Policy 72 (Student Appeals) https://uwaterloo.ca/secretariat-general-counsel/policies-procedures-guidelines/policy-72

♦ **Turnitin:** Text matching software (Turnitin®) will be used to screen assignments in this course. This is being done to verify that use of all materials and sources in assignments is documented. Students will be given an option if they do not want to have their assignments screened by Turnitin®. In that case, please contact the instructor to arrange for alternatives for assignment screening.

♦ **LEARN:** Users can login to LEARN via http://learn.uwaterloo.ca/. Use your WatIM/Quest username and password to login.