

DEPARTMENT OF CITY AND REGIONAL PLANNING
University of North Carolina at Chapel Hill

PLAN 799(2) Planning Seminar: Urban Growth Simulation Modeling

Professor Todd BenDor (Primary)

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Office Hours: 2-3:30 T, TH

Also by appointment

Spring 2008

10:00 – 12:00 F or

10:00 – 4:00 F

New East Room 102

Professor Daniel A. Rodriguez

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Office Hours: 9-11, F

<http://blackboard.unc.edu>

Professor Yan Song

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Office Hours:

Objectives

This workshop provides an intensive overview of urban simulation modeling, a cutting edge field that aims to better understand the future impacts of urban growth on the environment, land use change, traffic and congestion, employment and regional economics, social and economic justice, and quality of life. Its purpose is to develop a deep understanding of urban simulation modeling techniques and an awareness of current and future modeling capabilities and uses.

Urban modeling techniques are used in a variety of ways in public and private planning, including evaluation of development impacts and land use, transportation, and environmental policies. By analyzing and discussing prominent urban modeling frameworks, the course will build a deeper knowledge of the complexities and interactions of growing urban regions as a whole.

This course will center on a series of workshops led by leading urban modeling researchers from around the world to the UNC campus. The course is designed for advanced masters' students, doctoral students and post-doctoral students with a basic familiarity with one or more urban growth modeling approaches and who wish to master this topic. Students are expected to be familiar with the application of applied statistical methods (e.g., linear regression and categorical data analysis), as well as spatial analysis techniques using geographic information systems (GIS).

By the end of the course students will be able to:

- Understand the modeling structure underlying popular cellular automata and agent-based models applied to urban growth simulation
- Determine data requirements
- Specify the behavioral frameworks and normative assumptions underpinning each model

- Formulate the strengths and weakness of such models
- Identify areas of improvement and prepare a research proposal for doing so

Course Format and Requirements

The bulk of the course will consist of five (5), day-long workshops every third Friday during the spring semester. The week following each of these workshops we will hold a two-hour meeting to discuss readings and prepare for the upcoming workshop. During those meetings we will discuss assigned readings to develop an understanding of the modeling frameworks prior to the workshops. This preparation will facilitate a much stronger and more in-depth understanding of the world of urban simulation modeling. In all, there will be six (6) two-hour sessions and five (5) day-long workshops, including an introductory session during the first week of classes (prior to the first workshop). Attendance of all sessions is mandatory. All sessions will be held in New East Room 102, although part of workshop meetings may also take place in the Odum Institute computer lab in Manning Hall Room 001. Required and recommended readings will be posted on the UNC Blackboard (<http://blackboard.unc.edu>).

Course requirements include: (1) workshop attendance (all workshops must be attended or automatic failure) and participation (20% of course grade); and (2) completion of a series of 2-page, post-workshop reflection papers (4 papers making up 40% of course grade), and (3) completion of a final paper, which will take the form of a research proposal (40% of course grade).

Course Meeting Timeline

Week	Meeting Date	Workshop Meeting	Preparation Meeting
		10 am - 4 pm	10:00 -noon
1	11-Jan		X
2	18-Jan	Jim Westervelt	
3	25-Jan		
4	1-Feb		X
5	8-Feb	Jim Westervelt	
6	15-Feb		X
7	22-Feb	Paul Waddell	
8	29-Feb		X
9	7-Mar	Paul Waddell	
10	14-Mar	Spring Break	
11	21-Mar	Easter Holiday	
12	28-Mar	DCRP Open House	
13	4-Apr		X
14	11-Apr	Michael Batty	
15	18-Apr		X
16	25-Apr	John Landis (Pending)	

Term Project: Research Proposal

The major evaluation in this course will focus on a research proposal crafted by each individual student. This work will propose research that will improve the operational characteristics or expand the scope of one or more urban growth models/frameworks presented in the course. Proposals are not required to have budgets or timelines associated with the actual research work, but are expected to define a discrete problem or shortcoming that the student would like to address with one of the models presented. The proposal should explain what the problem is, why it is important, and how the student proposes to address it. The proposal should answer a series of important questions:

1. What is the discrete problem/issue that you wish to address?
2. Why is the problem important?
3. What is the state of knowledge about the problem?
4. How does the modeling framework that you plan to improve approach the problem?
5. How will you address the problem?
6. What methods do you propose to use?
7. What are the implications of finding the answer?
8. How will the answer extend the state of knowledge and practice?

Make these proposals as realistic and creative as possible, keeping in mind on how an urban growth model could enhance your own research! An important part of this process is being able to synthesize and connect your own research interests and field knowledge with that of the literature and experience in urban modeling that you will gain from this course. Although you may use as many references as are necessary (widely available peer-reviewed/government sources), limit the proposal length to twenty (20) single spaced pages or less.