



CENE 499/543 & PL499/599

Urban Transportation Planning

[web-delivered](#)

Fall Semester 2002

3 Credit Hours

Syllabus (8/26/02)

Instructor: **Craig Roberts, Ph.D., P.E.**
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Computer/Web Technical Help (help desk): NAU supports web students through its online help, which can be reached through the general NAU web home page (www.nau.edu)--under the "Student Links" pull-down menu, look for "Computer Help." **Note: ALL WEB students get to use this help regardless of location—note the toll-free phone number.**

Office Hours: I do not keep regular "office hours" in a web course. Instead, we use four tools to communicate with each other:

- **Mail** tool (asynchronous email within the course): I will check every other day for emails sent to me within the course, and will try to check daily. Please contact the NAU help desk for the course for all technical problems, but you can contact me if all else fails.
- **Discussion** tool (asynchronous comments about specific topics): You will discuss specific topics that either (1) are part of your homework or (2) that I post and notify you are open for discussion. You are expected to contribute to these discussions, which take the form of "threaded" comments linked in a string, with each new comment added at the end. Typically part of your grade depends on your level of contribution.
- **Chat** tool (synchronous or "live"): I may try to schedule a few "live" chats on topics among the whole class. It can also be used for "live" chats among a team or between two people (one of which can be the Instructor). Everyone has to be online at the same time for "live" activities, so they are not used often.
- **Whiteboard** tool (synchronous or "live"): Can be used alone or in conjunction with the *chat* tool. This allows a figure or drawing to be displayed and seen by all. Everyone can mark on the drawing as we chat about it. The figure can be uploaded by the Instructor or by a student. It can be used by all simultaneously or used by a team working on a project or simply by two people in class chatting with each other.

Class Schedule: There is no regular "class time" in a web course. You log on and work when it fits your schedule. The homework assignments are posted online along with the due dates. Class "discussions" are typically conducted by reading classmates comments on a subject



and adding your own with the discussion tool. An exception is when a class (or team) “chat” is scheduled, which requires everyone to be online at the same time. These will be coordinated in advance by the Instructor or by a team leader. Normally you will work at your own pace

Course Objective: Students will acquire a working knowledge of basic urban transportation planning principles. These principles will be applied to simulated problems using methodologies typically encountered in professional practice.

Course Outcomes:

1. Each student will be able to explain a wide range of urban transportation planning principles.
2. Each student will be able to describe the methodological evolution of urban transportation planning and the societal context in which it occurred.
3. Each student will be able to describe how likely societal change scenarios will affect future transportation planning methods.
4. Each student will be able to apply previously acquired engineering and/or planning analysis skills to the quantitative calculations involved in urban transportation planning.
5. Each student will be able to predict urban travel demand using the urban transportation modeling system (4-step model).
6. Each student will strengthen her/his observational and professional critique skills regarding the daily transportation environment in which they live, work, and play.

Course Prerequisites:

Undergraduate: A 300- or 400- level course in either Civil Engineering or Public Planning; or by permission of the instructor.

Graduate: Admission to the Masters of Engineering Program (MENG) or as a qualified Non-degree seeking graduate student. The MENG program requirements are specifically defined on its website (<http://triuniv.engr.arizona.edu>). A qualified Non-degree seeking graduate student typically will have a BS in Civil Engineering or Planning and/or sufficient job experience in transportation engineering/planning.

Required Text:

Urban Transportation Planning; A Decision-Oriented Approach (2nd edition) by Michael D. Meyer and Eric J. Miller, copyright 2001, McGraw-Hill, ISBN 0-07-242332-3. This is a brand new edition. Do not get the first edition, as it is not useful. You can purchase this text at the NAU bookstore online (go to www.nau.edu and under “Student Links” choose “Bookstore”) or probably from www.amazon.com (but I am not sure). University of Arizona students might find the text in your campus bookstore (but I am not sure). Again, you must get the second edition (copyright 2001).

Grading Scheme: The following grading scale pertains to all work. At the discretion of the instructor, all of the student grades on any quiz, exam, homework, or other exercise may be increased (but not lowered). Extra credit questions may be given on any quiz, exam, and homework that can add points to the normal grade for that quiz, exam, or homework.

90.0 - 100.0 = A 70.0 - 79.9 = C 59.9 or lower = F

80.0 - 89.9 = B 60.0 - 69.9 = D

Course Evaluation: These weightings will be given to each student's work to determine her or his overall grade in the course:

Undergraduate Students

Average of Exams 1 and 2	20%
Average of Homeworks and Quizzes	50%
Lab Simulated UTP Projects	15%
Participation in Class Discussions	10%
Final Exam ⁽¹⁾	<u>5%⁽¹⁾</u>
	100%

Graduate Students

Average of Exams 1 and 2	20%
Average of Homeworks and Quizzes	40%
Lab Simulated UTP Projects	15%
Participation in Class Discussions	10%
Term Paper ⁽²⁾	10%
Final Exam ⁽¹⁾	<u>5%⁽¹⁾</u>
	100%

⁽¹⁾ Students who maintain an average of 92.0 or greater will be exempt from the Final Exam. However, this requires that the Student complete all homework assignments. In addition, the last two homework assignments must receive a grade comparable with the Student's previous homeworks.

⁽²⁾ Graduate students will do a term paper in addition to the other work in the class.

Estimated Time Course Will Take: This is a graduate-level course. Personal motivation is typically higher in a graduate course so time spent is highly variable. In the undergraduate classroom, the rule-of-thumb is 3 hours homework for every hour of lecture (3 hrs lecture + 9 hrs homework). In this course, a great deal of time will be spent reading the text. Each chapter covers an important topic in some degree of depth. Some subtopics will be of more interest to you than others. The web site links provided will take a measured amount of time to explore in general, but some will simply "swallow you" because they are of great interest to you.

Self-discipline: If this is your first web course, it will be a very different experience from your classroom experiences. I leave it to you to learn about the differences as the course unfolds with one caveat. In a classroom MWF lecture format, students typically rely heavily on their lecture notes and class discussions as a substitute for actually reading and thinking about the material on their own. Homework is often done by scanning the chapter to "find the answer", which often works because of the general knowledge gained from the lectures.

Obviously in a web class there are no lectures and no lecture notes. Reading the chapter is the primary avenue for learning the material, and the reading is not "light." Your reading typically entails a fair amount of back-and-forth within the text as you compare it to earlier sub-sections in the same chapter and contrast it to related topics in previous chapters.

Previous students of web courses recommend you spread out your work over three or more sessions a week. During each study session, check in to the web course to post discussion comments and read what others have written. You will be learning almost as much from the ongoing online discussions as from the text. **You can and should ask questions of your classmates about things you have read that puzzle you. Online questions and answers with classmates are your main vehicle for learning about things that are unclear after you have read the material.** If your classmates can't answer a question, I will try to answer it. We will also have class "discussions" on various chapter topics.

Online Participation in Discussions: You will note that "Participation in Class Discussions" is a significant part of your grade. I will evaluate your online participation on each topic. I expect all class members to fully participate in each topic. Obviously because of your backgrounds and interests, you will probably participate in some topics more heavily than in others. For your information, the web course software keeps a summary of each class member's total activity whenever he or she is online. So I will track how often you logon, visit topics, post comments to discussions, look at assignments, etc. Whereas this quantitative information will effect my evaluation to some degree, my main evaluation will be based on the extent and quality of your active participation in class discussions.

Student Code of Conduct: Students are expected to perform class activities in keeping with standards of the NAU Code of Conduct, detailed in Appendix C of the Student Handbook (<http://www.nau.edu/~stulife/conduct.html>) and the Policy on Academic Dishonesty detailed in Appendix G of the Student Handbook (<http://www.nau.edu/~stulife/dishonst.html>).

Although students are **encouraged** to help each other on homework, each homework must reflect the individual student's efforts. Appropriate action will be taken towards any student suspected of violation of the Code of Conduct, the Policy on Academic Dishonesty, and/or the Professional Code of Conduct.

Professional Code of Conduct: Exceptionally high standards of honor and integrity are fundamental and essential to the study and practice of engineering. Academic preparation for the profession must be conducted in an atmosphere which fosters these values. Therefore, in addition to the student Code of Conduct, the NAU College of Engineering and Technology has adopted this Professional Code of Conduct (CET Policy 18).

All students are expected to conduct themselves professionally. Violation of the National Society of Professional Engineers (NSPE) (Code of Ethics <http://www.nspe.org/ethics/eh1-code.asp>) or the Association for Computing Machinery (ACM) Code of Ethics and Professional Conduct (<http://www.acm.org/constitution/code.html>) may lead to dismissal from the College's academic programs. Copies of these codes are available in the Office of the Dean.

Selected University Policies Of Particular Concern to Course Activities: Information can be found in these references. These are not a complete list of such policies.

- Safe Working and Learning Environment (Student Handbook, Appendix M located in <http://www.nau.edu/stulife/handbook.html>)
- Institutional Review Board on the Protection of Human Subjects (<http://www.nau.edu/grants/irb.htm>)

GENERAL OVERVIEW of CLASS SCHEDULE(see “**Assignments**” in Web Class Actual Assignments and Deadlines)(Please note that even the course web pages will change from time to time (updated by Instructor), so always check the latest posting for an assignment before you start it.)

Week Beginning	Reading Assignment	Class Content
8/26/02	Web Course Tools & Structure	<p>How do you use all of the tools available in this web course? How are the content modules arranged? How are assignments received and submitted? How do you make and upload a presentation?</p> <p>Assignment: “Ch. Web Intro. HW” (note: This is only a guideline--see online “Assignments” for actual assignment and deadlines)</p>
9/2/02	All Ch. 1	<p>How do you define Urban Transportation Planning (UTP)? What is a multimodal approach to planning? Recent trends in travel behavior and legislation <i>Monday is Labor Day (9/3/01)</i></p> <p>Assignment: “Ch. 1 HW” (note: This is only a guideline--see online “Assignments” for actual assignment and deadlines)</p>
9/9/02	All Ch. 2	<p>Who makes transportation planning decisions? How did transportation planning and policy evolve? 5 models for making decisions. How are transportation planning and decision making linked?</p> <p>Assignment: “Ch. 2 HW” (note: This is only a guideline--see online “Assignments” for actual assignment and deadlines)</p>
9/16/02	Ch. 3. p. 89-111	<p>What is a systems approach? How do we define the elements of transportation “system”?</p> <p>Assignment: “Ch. 3 HW--Part 1” (note: This is only a guideline--see online “Assignments” for actual assignment and deadlines)</p>
9/23/02	Ch. 3 p. 112-178	<p>How do transportation systems impact other systems? How is travel distributed temporally and spatially? How are different modes of travel distributed?</p> <p>Assignment: “Ch. 3 HW--Part 2” (note: This is only a guideline--see online “Assignments” for actual assignment and deadlines)</p>
9/30/02	All Ch. 4	<p>Good decisions require good data--what is good transportation planning data? How do we classify and organize system and user data? How do we develop community UTP goals “data”? Closing the loop--Measures of Effectiveness (MOEs). Data, data, data everyway--how do we manage it?</p> <p>Assignment: “Ch. 4 HW” (note: This is only a guideline--see online “Assignments” for actual assignment and deadlines)</p>

10/7/02	Ch. 5 p. 247-255	Test No. 1 --Covers chapters 1 through 4 What is Travel Demand Analysis?
		Assignments: "Ch. 5 HW--Part 1" and for LAB --Lab Tutorial and example 4-step modeling case studies.
10/14/02	Ch. 5 p. 256-289	Economic concepts underlying travel demand. Simplified demand analysis: trend and elasticity models. What is the "4-step" process? Why is the 4-step process so universally used and abused? Trip generation, trip distribution, mode split, and network assignment.
		Assignments: "Ch. 5 HW--Part 2" and for LAB --Laboratory Homework 1--Demand Analysis; Site Impact <i>(note: This is only a guideline--see online "Assignments" for actual assignment and deadlines)</i>
10/21/02	Ch. 5 p. 290-331	Discrete choice models--logit. Activity-based methods. What is "nonmotorized" demand?
		Assignments: "Ch. 5 HW--Part 3" and for LAB --Laboratory Homework 2--Demand Analysis; Development Impact <i>(note: This is only a guideline--see online "Assignments" for actual assignment and deadlines)</i>
10/28/02	All Ch. 6	What is urban activity analysis? Land use forecasting models. How does transportation impact the urban activity system?
		Assignments: "Ch. 6 HW" <i>(note: This is only a guideline--see online "Assignments" for actual assignment and deadlines)</i>
11/4/02	Ch. 7 p. 385-433	How does supply analysis differ from demand analysis? Analyzing transportation system performance--components. Network system performance.
		Assignments: "Ch. 7 HW--Part 1" <i>(note: This is only a guideline--see online "Assignments" for actual assignment and deadlines)</i>
11/11/02	Ch. 7 p. 433-481	Analyzing transportation system performance--networks. Traffic Signal System Simulations--CORSIM, SimTraffic Impact models: air, noise, and fuel. Capital Cost models.
		Assignments: "Ch. 7 HW--Part 2" <i>(note: This is only a guideline--see online "Assignments" for actual assignment and deadlines)</i>
11/18/02	All Ch 8	Basic economic principles--the time cost of money, before/after, with/without, apples/oranges. How do you measure "non-financial" benefits and costs? <i>Thursday is Thanksgiving (11/22/01)</i>
		Assignments: "Ch. 8 HW" <i>(note: This is only a guideline--see online "Assignments" for actual assignment and deadlines)</i>
11/25/02	Ch. 9 p. 565-570	Test 2 --Covers Chapters 5 through 8 (The Instructor may substitute a Team project for this test) How are a program and a project different?

		Assignments: “Ch. 9 HW--Part 1” (<i>note: This is only a guideline--see online “Assignments” for actual assignment and deadlines</i>)
12/2/02 (Reading Week)	Ch. 9 p. 570-614	How do you set priorities among competing projects? How does funding affect programming? Innovative financing.
		Assignments: “Ch. 9 HW--Part 2” (<i>note: This is only a guideline--see online “Assignments” for actual assignment and deadlines</i>)
12/9/02		Final Exam