Course Orientation and Overview

CE 392D
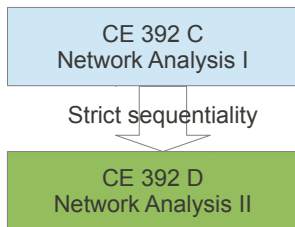
January 15, 2018

INTRODUCTIONS

1. Who are you?
2. Where are you from?
3. How long have you been at UT?
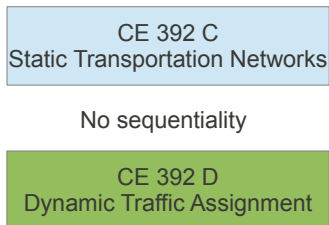4. Who is your advisor?
5. Something interesting about yourself...

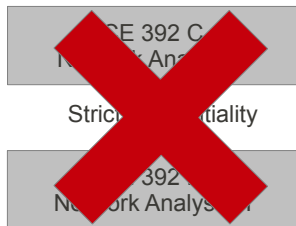# COURSE OVERVIEW

CE 392D is now "Dynamic Traffic Assignment"

CE 392 C
Network Analysis I

Strict sequentiality

CE 392 D
Network Analysis II

392C is *no longer* a prerequisite for 392D.

CE 392D is now "Dynamic Traffic Assignment"

CE 392 C
Network Analysis

Strict sequentiality

CE 392
Network Analysis

CE 392 C
Static Transportation Networks

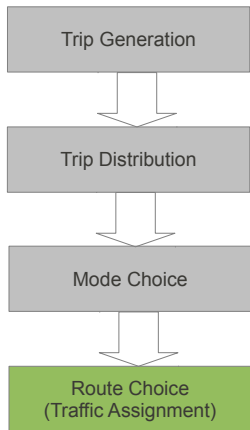No sequentiality

CE 392 D
Dynamic Traffic Assignment

392C is *no longer* a prerequisite for 392D.

# Network models represent transportation *systems*

The purpose is to predict route choice and macroscopic traffic flow, and to evaluate alternatives or policies.

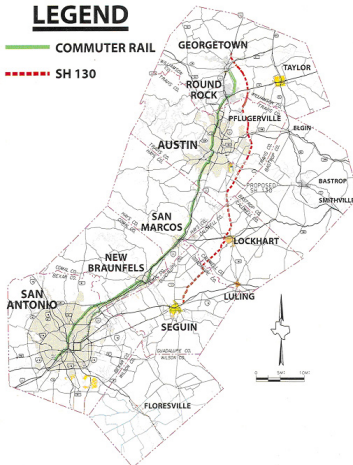# Network models traditionally form the fourth step of the planning process.

This course will not focus on travel demand modeling; we assume that a "trip table" is known to us.
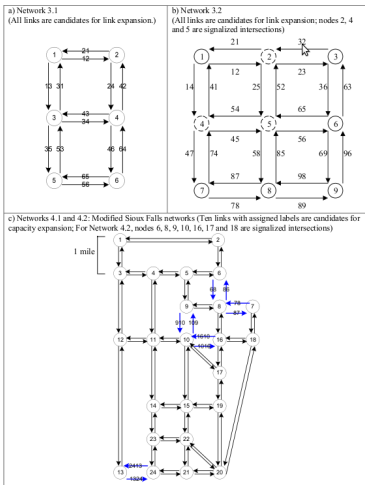
Switching 7th and 8th Street from one-way to two-way
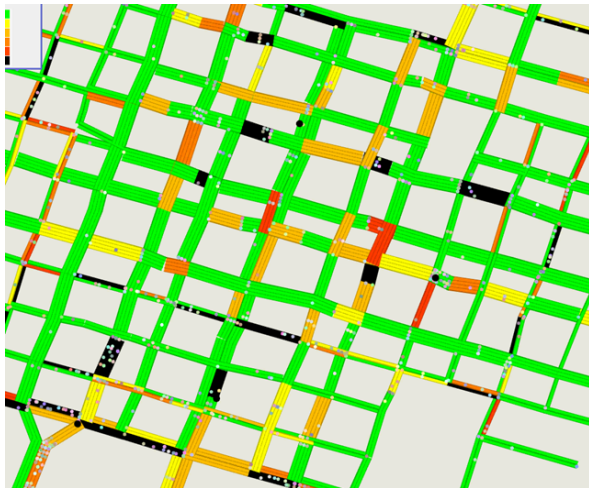
How many travelers will use a new freeway?

How can we design coordinated signals throughout a network?

Dynamic models explicitly show how system conditions change *over time*

By contrast, static models assume steady-state conditions.

Static and dynamic assignment models are surprisingly different.

Static Traffic Assignment
Steady-state demand
Steady-state traffic conditions
Link performance functions
Exact mathematical formulations
Efficient, provably correct solution methods

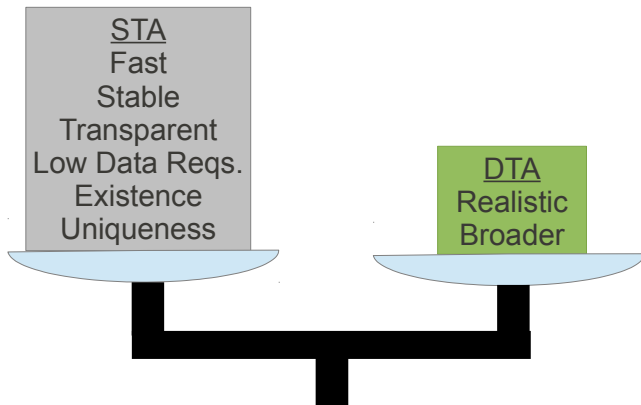**Dynamic Traffic Assignment**
Time-dependent demand
Congestion can grow and shrink
Many different traffic flow models
More "heuristic" in nature

Dynamic models are not universally better than static models.

STA
Fast
Stable
Transparent
Low Data Reqs.
Existence
Uniqueness

DTA
Realistic
Broader

Different tasks require different tools, and all models are wrong.

SYLLABUS AND ADMINISTRATIVE DETAILS

Office hours: TR 1:30-2:30 or by appointment; please email if you will be stopping by.

Course website:
http://sboyles.github.io/teaching/ce392d/index.html (link on Canvas)

No textbook; course notes will be posted online.

Category	Weight
Reading responses	5%
Assignments	30%
Exam	30%
Project	35%

$+/-$ grading will be used.

Reading responses

Most weeks in this course have an associated reading. Compose a short response (250–500 words) and email them to me at the start of the week.

Examples of things you can include:

- Questions about things in the reading which are unclear
- Commentary about related issues in your research or experience
- Critique of modeling assumptions made or suggestions of alternative assumptions and models
- Critique of notation, presentation format, and explanations; typos in the text
- Anything else which demonstrates that you have read the assigned sections and thought about them

Email me your response by **9 AM on Monday** of each week. Send them in **plain text** (no attachments or fancy formatting) with **392D reading response** in the subject line.

Assignments

There will be two kinds of assignments in this course:

- 6–7 short **practice assignments** on basic concepts. You will submit these assignments online with Google Forms. (Instructions will be posted on the course website.)
- 4 longer **homework assignments** which are more complex and require synthesis of concepts and some programming.

The first homework includes a Python tutorial to teach you what you need for this semester, and to familiarize you with the autograding script I will use. The remaining homeworks will ask you to implement some of the algorithms you learn in this course.

The exam will be near the end of the semester (April 24) and in-class. No final exam will be given.

The final project will include presentations during the last week of class (May 1 and 3), and a report due at the time of the scheduled final exam (Thursday, May 10, at 5 PM). This project will be in groups of 2 or 3 on a topic of your choosing. More details will be given as the semester progresses.

Policy on late work

Work submitted late will be accepted, but with an automatic penalty:

- Up to 1 day late: 10% off
- 1 to 2 days late: 20% off
- ...and so on, up to a 50% maximum penalty.

If there are special circumstances, please let me know well in advance (minimum 48 hours).

Miscellanea

- Consult catalog and departmental advisors for add/drop policy.
- Please coordinate with me and Services for Students with Disabilities if you have a disability requiring alternate accomodations.