

Course Title: Transportation and GIS

Course Number: CP 8833

Term: Fall 2008

Instructor: Dr. Jiawen Yang

Seats: 12

Course Description:

The role of geographic information systems (GIS) in relation to transportation planning, analyzing, evaluating, and system design has become critical. State departments of transportation, metropolitan planning organizations, and private firms have combined GIS with various transportation models.

This course covers the applications of GIS to transportation. Its primary goal is to help students understand the basic principles of geographical information science for transportation, and to equip students with the state-of-the-practice computing technology for transportation planning in a GIS environment.

Most exercises involve working with TransCAD, a GIS package developed primarily for transportation planning and modeling purposes. In addition to learning the operation of TransCAD GIS through lab exercises, participants of the class are required to work on assignments. By taking advantage of the computing capability of GIS, students can have more energy to develop critical thinking on transportation modeling.

The course is appropriate for those with transportation experience and interested in learning practical implementation of transportation modeling in the GIS environment. It is also appropriate for those with a GIS background and interested in gaining experience in transportation modeling. The specific learning objectives of this course are to:

1. Understand Transportation GIS fundamentals, including network, route and path, etc.
2. Increase proficiency in Transportation GIS routine operations such as data conversion, matrix operation, and topology building;
3. Become experienced in applying TransCAD to travel demand modeling and logistics analysis;
4. Explore creatively the applications of TransCAD GIS to other analytical tasks, for example, accessibility modeling, urban mobility performance, health impact assessment or those specific to students' own areas of study and interest.

Course Outline:

Class meets three hours each week. For a typical three hour session, the first 1.5 hours are used for a conceptual discussion of data models or transportation modeling. The second 90 minutes are mainly used for computer exercises. Lab instruction will offer self-paced learning, complemented by instructor's in-lab assistance.

Course Evaluation:

Students will be graded in two areas:

- 14 lab exercises (worth 6 points each for a total of 84 points).
- Project development (worth 16 points). Students will develop their own project plan, collect data, process and analyze the data, and present the result.

