Course Description: CVEEN 7540 Intelligent Transportation Systems

Offered Spring

Catalog Data

3 Credits: The vehicle, the systems, the driver, information technology, and ITS infrastructure.

Textbook

None - ITS is too new a field to have a recommended text. There will be assigned reading and plenty of background reading.

Coordinator: Peter T. Martin

Goals

Intelligent Transportation Systems “ITS”, is the collective application of the following information and control technologies to surface transportation:

- operating our transportation system more effectively
- moving goods efficiently by connecting the modes of free transportation
- intelligently satisfying the demands for mobility and access
- promoting modal shift through encouraging car pools, van pools, and the use of public transportation
- introducing congestion pricing systems, on a moderate scale
- and when practicable, eliminating the need for travel through virtual travel

The learning should equip the student to:

- Have a basic understanding of the emerging field of ITS
- Acquire a critical view of the state of the art of the field

Prerequisites

CVEEN 3520 or instructor consent

Topics
Course Content

Institutional Aspects

What is ITS?
System Architecture
System Procurement
Evaluation of ITS Projects
Rural ITS Issues
ITS and Privacy

Core Technologies

Artificial Intelligence
Vehicle Sensors
ITS Field Equipment
Communication Technology
Microwave and optical devices
Video Imaging
GIS(T)

*ITS Research*
Automated avalanche warning systems
Real-Time Flow Inference models
Electronic Road Tolling
Human Factors and ITS
Information retrieval systems

*State of the Art Review*
Automated Highway Systems
Advanced Traffic Control Systems
Incident Detection and Response
Ramp Metering
Automated Barrier Systems
Traffic Operations Center Design