Department: Civil Engineering
Number: CE 6301
Title: Infrastructure Management

Catalog Description: infrastructure preservation and improvement planning, project prioritization, infrastructure performance prediction, life cycle cost analysis of constructed infrastructure systems.

Prerequisites: Graduate level in engineering

Textbook: 1) Handouts (technical papers, published reports, etc.)
2) Infrastructure Management
   By Hudson, Haas, and Waheed Uddin,

Course Objectives: The objective of this course is to introduce the student to the fundamental concepts and methods of managing existing constructed infrastructure systems. The basic premise of this course is that many of the same principles and techniques apply to many infrastructure systems (transportation, water, electrical power, etc.). However, transportation infrastructures will be used to demonstrate the application of these tools and techniques.

Specifically, the student will develop the following skills and understanding:
- Knowledge of the criticality and conditions of constructed infrastructure systems in the U.S. (2 & 4)
- Asset management approach for maintaining and rehabilitating constructed infrastructure systems (2 & 3)
- Key analytical methods and technologies for infrastructure management such as performance prediction models, life cycle cost analysis, and benefit-cost analysis (1 & 4)

Topics covered
1. Introduction to infrastructure systems: definition, criticality, conditions, and resources
2. Governmental Accounting Standards Board (GASB) Statement 34
3. Infrastructure asset management:
   a. Principles and framework
   b. Data collection and integration techniques
   c. Analytical methods to support decisions:
      i. Infrastructure performance prediction models
      ii. Life cycle cost analysis of infrastructure assets
      iii. Consequence (what-if) analysis
      iv. Maintenance and rehabilitation (M&R) needs assessment
      v. Prioritization and optimization of M&R projects
      vi. Probabilistic models and reliability

Class Schedule
Fall 2004: TR 6:00 PM - 7:20 PM

Contribution of course to meeting the professional component: This course contributes to systems engineering and management.

Prepared by: Nasir G. Ghaarabe
Date: May 11, 2005