INFORMATION TECHNOLOGIES IN CONSTRUCTION

Course Number: CEE 5084 (Taught every Fall Semester)

Course Description

With the acceleration of the process of global revolution in science, engineering and technology led by information technology, the human society is in a gradual transition from an industrial society into an information society. As a new productivity with the greatest potential at the present age, information technology has undergone great development. The incessant innovation in technology has also urged people to make better use of it and apply advanced information technology to their own industry. In recent years, Information Technology (IT) and Cyber Infrastructure has been transforming business practice in many sectors, resulting in efficiency gains and improved services for the client. The construction industry has been slow to utilize information technology effectively and slower still to grasp the ways in which the multitude of design, calculation, specification, project management, asset management, sensor technology, database and data analysis software applications relate to each other. This course provides an overview of the range of Information Technology (IT) applications available to the construction engineering professional throughout the life cycle of a project, from data collection and analysis through software, project management, visualization, and infrastructure asset management.

Course Objectives

Comprehensive systems approach to civil infrastructure system and information management with emphasis on municipal, highway, building, Dam, and bridge infrastructure. Information Technology (IT) enables fundamental changes in work processes, interactions, and organizational structures. Course will cover various aspects of information technology: needs assessment, information technology and management, data mining, sensor informatics, intelligent systems, simulation, and visualization.

The objectives of this class is to expose students to a large variety of information technologies, discuss the impact of such technologies on work environments and processes, and investigate the various issues surrounding information technology implementation such as standards, integration, knowledge management, and technology.

Course Structure

This course will follow the structure of information technology and management that is gaining acceptance in the civil infrastructure systems. This is a seven-part structure:

- **Information Technology Architecture**
- **Implementation Plans & Organizations**
- **Data, Data Analysis, and Data Management**
- **Computer Vision and Visualization System**
- **Communications and Networks**
- **Intelligent Systems (i.e. Intelligent Transportation Systems)**
- **Cyber Infrastructure and Security**