

CEE 613

Computer Aided Pavement Engineering

- Catalog data:** 20-CEE-613. Computer Aided Pavement Engineering. 3 ug./gr. cr. Use of computers for analysis, design and evaluation of flexible and rigid pavements; analysis of nondestructive testing, (NDT), pavement data; maintenance management of pavements.
- Prerequisites:** 20-CEE-607; Pavement design, strength of materials, soil mechanics, construction materials, and transportation engineering.
- Textbook:** Ioannides, A.M., *CEE 613-Computer Aided Pavement Engineering: Supplementary Class Notes*, UC, Cincinnati, OH, 2004.
Huang, Y.H., *Pavement Analysis and Design*, Prentice Hall, Inc., Englewood Cliffs, NJ, 1993.
- References:** Ioannides, A.M., *CEE 633-Mechanistic Principles of Pavement Design: Supplementary Class Notes*, UC, Cincinnati, OH, 1997.
Ioannides, A.M., *CEE 607-Pavement Design: Supplementary Class Notes*, UC, Cincinnati, OH, 1999.
- Coordinator:** Dr. Anastasios M. Ioannides, Associate Professor of Civil Engineering, 791 Rhodes Hall, 556-3137, Anastasios.Ioannides@UC.Edu
- Goals:** To introduce students to the exploding field of computer software suitable for use in a variety of pavement engineering activities, emphasizing the scope of applicability, advantages and limitations of each package. To train students in the practical design-office applications of the best known and well respected pavement engineering software, and to familiarize them with available computer output interpretation methods. To provide hands-on experience in the use of state-of-the-art software for flexible and rigid highway and airport pavements.
- Lecture or lab topics:**
1. History of computer use in pavement engineering. (2 classes)
 2. Software for pavement analysis: closed-form, numerical integration, finite element. (6 classes)
 3. Software for pavement design: American Association of State Highway and Transportation Officials (AASHTO), Portland Cement Association (PCA), The Asphalt Institute (TAI), Federal Aviation Administration (FAA). (6 classes)
 4. Software for pavement evaluation: iterative, database, closed-form. (4 classes)
 5. Software for pavement maintenance: empirical/ statistical models, scheduling. (2 classes)
- Computer usage:** Hands-on experience with a variety of pavement engineering software. All assignments, as well as all examinations involve use of such software. Computer spreadsheets, word processing, computerized graphing strongly encouraged.
- ABET criterion 3:** a, c, e, f, g, h, j, k
- ABET criterion 8:** a, d
- Date prepared:** December 09, 2003 , Last Update April 25, 2007