UTSA English Language Center

Graduate International Pathway: Civil Engineering — Transportation track

Course Options

- **CE 5043. Advanced Civil Engineering Statistics. (3-0) 3 Credit Hours.**
  - **Course description:** Statistical analysis methods include descriptive statistics, interval estimation and hypothesis testing, analysis of variance, design of experiments, regression analysis, and time series analysis. Additional topics covered include probabilistic methods, decision analysis and reliability analysis applied to civil engineering systems.

- **CE 5143. Numerical Methods in Civil Engineering. (3-0) 3 Credit Hours.**
  - **Course description:** Mathematical equation root finding and optimization methods, matrix equations, solution methods, eigenvector and eigenvalue solution methods, finite difference methods, curve-fitting methods, numerical integration and differentiation techniques, and introduction to finite element formulations.

- **CE 5403. Advanced Characterization of Highway Materials. (3-0) 3 Credit Hours.**
  - **Course description:** Basic and advanced level of the fundamentals of material response to static and repeated loading; emphasis on the deformation and fatigue behavior of asphalt mixtures, constitutive modeling for mixtures, microstructure characterization for mixtures, nondestructive testing of pavements, asphalt binder characterization, unbound materials (base and sub-base materials) evaluation and characterization.

- **CE 5453. Transportation Engineering. (3-0) 3 Credit Hours.**
  - **Course description:** Study of the Highway Capacity Manual, traffic stream parameters and relationships, analytical techniques in traffic engineering such as capacity analysis, queuing theory, and traffic simulation. Design and operation of advanced traffic management systems including signalization, real-time motorist information, urban incident management, and ITS concepts. (Formerly CE 5513 Topic 8: Principles of Traffic Engineering. Credit cannot be earned for both CE 5453 and CE 5513 Principles of Traffic Engineering.)