

Graduate International Pathway: Civil Engineering — Structures 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 5103. Advanced Steel Design. (3-0) 3 Credit Hours.**
 - **Course description:** Connection design, welded and bolted, moment-resistant connections, plate girders, column stability, bracing design, and seismic design of frames. (Formerly CE 5343 Topic 4: Advanced Steel Design. Credit cannot be earned for both CE 5103 and CE 5343 Advanced Steel Design.)

- **CE 5133. Advanced Reinforced Concrete. (3-0) 3 Credit Hours.**
 - Curved beams, torsion design, retaining walls and shear walls, stairs, two-way slabs, yield-line theory, biaxial load on columns, slenderness effects, joint design, strut-and-tie methods, and concrete elasticity and failure criteria. (Formerly CE 5343 Topic 2: Advanced Reinforced Concrete Structures. Credit cannot be earned for both CE 5133 and CE 5343 Advanced Reinforced Concrete Structures.)

- **CE 5163. Advanced Structural Analysis. (3-0) 3 Credit Hours.**
 - The class covers the matrix analysis method applied to structural analysis. The course will cover all the facets of the structural analysis method including the assembly of element and structure stiffness matrices, fixed end force and moment vectors, and nodal displacements.

- **CE 5173. Dynamics and Vibrations. (3-0) 3 Credit Hours.**
 - The class covers the fundamentals of structural dynamics, including single-degree-of-freedom and multi-degree-of-freedom systems. The course presents common analysis techniques used to calculate the dynamic response of structures to different types of time-varying loads.