

Architectural Engineering (AEEN)

AEEN 5301 Systems Integration and Modeling 3 SCH (3-0)

Building envelope, fenestration system, lighting system, energy systems, system integration, modeling and analysis.

AEEN 5302 Energy Statistics and Data Analysis 3 SCH (3-0)

Introduction to advanced data analysis and predictive modeling techniques applied to building energy systems.

AEEN 5303 Advanced Topics in Architectural Engineering 3 SCH (3-0)

One or more advanced topics in architectural engineering. May be repeated for credit with change in topic.

AEEN 5304 Heat Transfer in Buildings 3 SCH (3-0)

Heat transfer fundamentals; Conduction, convection and radiation; Solar radiation; Heat gain through windows; Building loads.

AEEN 5306 Thesis 3 SCH (0-3)

Designed for thesis option students. The course requires completion of thesis research. Prerequisite: departmental approval.

AEEN 5307 Building Energy Audits 3 SCH (3-0)

Building energy assessment principles and protocols, energy economics, energy measurement and verification, energy metric comparison and analysis, energy efficiency standards, retrofit analysis.

AEEN 5308 Sustainable Buildings 3 SCH (3-0)

Design and construction of sustainable buildings. Renewable energy applications and energy efficient design. Repurposed and sustainable construction materials and finishes. Green buildings.

AEEN 5309 Lighting Systems and Design 3 SCH (3-0)

Application of lighting in buildings. Electrical light sources and related equipment, types, characteristics, life, losses and efficiency. Lighting design criteria, calculation methods. Daylighting.

AEEN 5311 Advanced Reinforced Concrete Design 3 SCH (3-0)

Analysis and design of flat plate, flat slab and two-way slab systems for gravity loads and lateral loads. Yield line theory of slabs. Deep beams, shear-friction, brackets and corbels. Length effects on braced and unbraced columns. Undergraduate knowledge of reinforced concrete design is expected.

AEEN 5320 Foundation Engineering I 3 SCH (3-0)

Engineering characteristics of soils, consolidation, soil strength and bearing capacity for the analysis and design of spread and continuous footings, compensated foundations and deep foundations. Undergraduate knowledge of steel design is expected.

AEEN 5321 Structural Dynamics 3 SCH (3-0)

Dynamic disturbances, such as earthquakes and blasting. Vibration of beams, frames and floor systems; response to various types of external disturbance; energy methods. Undergraduate knowledge of dynamics is expected.

AEEN 5322 Foundation Engineering II 3 SCH (3-0)

Understanding of the bearing capacity of deep foundations, installation methods of deep foundations, analysis and design of a single pile and group piles. Undergraduate knowledge of dynamics is expected.

AEEN 5335 Prestressed Concrete 3 SCH (3-0)

Principles and methods of design of members subject to linear prestressing; time-dependent variables and long-time deflections. Prestressed columns. Undergraduate knowledge of reinforced concrete design is expected.

AEEN 5337 Advanced Structural Analysis 3 SCH (3-0)

Theorems of external work and internal strain energy. Classical methods of analysis. Continuous girders and frames with variable moments of inertia. Influence lines for redundant reactions. Analysis of sidesway by moment distribution. Introduction to matrix analysis of structures. Undergraduate knowledge of structural analysis is expected.

AEEN 5360 Advanced Structural Engineering 3 SCH (3-0)

Initial value problems, elasticity preview, basic energy principles and applications to pin-connected structures, calculus of variation, applications to plates, stability, applications to dynamics. Undergraduate knowledge of dynamics is expected.

AEEN 5361 Advanced Structural Steel Design 3 SCH (3-0)

Design of steel structural members, including composite beams, plate girders and connections following the AISC LRFD specifications. Design of frame structures including second order effects. Undergraduate knowledge of steel design is expected.