



UNIVERSITY OF SOUTH ALABAMA

Department of Civil, Coastal, & Environmental Engineering Graduate Certificate in Structural Engineering

The Department of Civil, Coastal, & Environmental Engineering offers a Graduate Certificate in Structural Engineering. This is an important sub-discipline of Civil Engineering that typically requires practicing structural engineers to have obtained additional education for licensure and for establishing competency. This Graduate Certificate requires successful completion (grade B or higher) of four graduate-level courses that provide additional structural engineering knowledge beyond what is provided in most BSCE programs.

Required courses:

A minimum of 12 credit hours, or four 3-credit courses, is required. Any **four** of the following courses may be chosen:

- **CE 582 Timber Design:** This course covers the design of timber structures, including design loads, structural behavior, properties and grades of wood, design of beams, columns, diaphragms, shearwalls, structural glued laminated timber, and structural connections.
- **CE 583 Advanced Steel Design:** This course covers the design of built-up members, composite beams, columns and floors. Design of advanced bolted and welded connections is also covered. Students use state-of-the-art software to model and design complex steel structures.
- **CE 584 Advanced Structural Analysis:** Students are introduced to the analysis of indeterminate structures using classical and matrix methods. Students are also introduced to advanced structural modeling techniques using state-of-the-art software.
- **CE 587 Advanced Concrete Design:** Students are introduced to the analysis and design of reinforced concrete footings, retaining walls, two-way floor systems, long columns, beams subjected to torsion and deep beams.
- **CE 588 Prestressed Concrete Design:** Students are introduced to the concepts of prestressing, loss of prestress, design of prestressed beams, columns and slabs.
- **CE 590 Special Topics:** Topics of current Civil Engineering interest, approved by the student's graduate committee.
- other graduate courses related to Structural Engineering approved by the student's graduate committee.

Students may apply these courses towards a full graduate degree (e.g., MSCE or PhD).

Background:

This Structural Engineering Certificate Program responds to the local engineering community's need for additional technical expertise (beyond what is available in most BSCE curricula) in the area of Structural Engineering. Structural Engineering expertise is required by certain specific employers and is needed by practicing engineers to become a licensed Professional Engineer (PE) within the structural engineering sub-discipline.