1. *Course number and name*

**ENGR 832: Advanced Topics in Seismic Design**

1. *Credits and contact hours*

3 credit hours; one 2-hr-45-minute lecture/week

1. *Instructor’s or course coordinator’s name*

Instructor: Anindya Dutta, Ph.D., S.E.

Course coordinator: Cheng Chen, Professor of Civil Engineering

1. *Text book, title, author, and year*

AISC/SEI 41-13 Seismic Evaluation and Retrofit of Existing Buildings

1. *Specific course information*
2. *brief description of the content of the course (catalog description)*

Application of computer software for structural design. General concepts of energy dissipation systems. Current methods of structural control. Implementation issues, case studies, and seismic code provisions.

1. *prerequisites or co-requisites*

Restricted to graduate Civil Engineering students or permission of the instructor.

1. *indicate whether a required, elective, or selected elective course in the program*

Elective Course for Civil Engineering.

1. *Specific goals for the course*
2. *Specific outcomes of instruction.*

* Student can conduct response spectral analysis
* Student can analyze MDOF systems for mode shapes.
* Student can identify design issues for seismic design.
* Study can understand section design procedure and concept of confinement.
* Student can conduct moment curvature analysis.
* Student can select methods for retrofitting deficient structures.
* Student can conduct nonlinear static and dynamic analysis
* Student can use Perform 3D for modeling

1. *explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.*

ABET Student Outcome(s): 1, 2, 3, 6, 7

1. *Brief list of topics to be covered*

* Earthquakes
* Characterization of Ground Shaking
* Rigid Wall Flexible Diaphragm Buildings
* Reinforced Concrete Structures
* Performance Based Design
* Use of Non-linear Analysis