1. *Course number and name*

**ENGR 836: Structural Design for Earthquakes**

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*

2021 IBC Structural/Seismic Design Manual Volume 3: Examples for Concrete Buildings

2021 IBC Structural/Seismic Design Manual Volume 4: Examples for Steel-Framed Buildings

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

Earthquake resisting systems in buildings; seismic design criteria for structures; seismic upgrade and retrofit; computer applications in structural modeling and analysis for seismic forces..

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 analyze and design steel moment resisting frames.
* Student can analyze and design steel concentrically braced frames.
* Student can analyze and design steel eccentrically braced frames.
* Student can analyze and design concrete special moment resisting frames.
* Student can analyze and design buckling restrained braced frames.
* Student can analyze and design concrete special moment resisting frames.
* Student can analyze and design of concrete special shear walls
* Student can analyze and design of steel plate shear walls

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*

* Steel Moment Resisting Frames
* Wood Diaphragm Analysis, Plywood Shear Walls, Collectors
* Steel Special Concentrically Braced Frames
* Steel Eccentrically Braced Frames
* Buckling Restrained Braced Frames
* Concrete Special Moment Resisting Frames
* Concrete Special Shear Walls
* Concrete Masonry Shear Walls
* Steel Plate Shear Walls