1. *Course number and name*

**ENGR 835: Advanced Steel Structure**

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*

Louis F. Geschwinder, Judy Liu & Charles J. Carter, Unified Design of Steel Structures, 4th Edition, 2017

American Institute of Steel Construction AISC, LRFD, 2022.

*Recommended Resources:*

Salmon, G. Charles, and Johnson, E. John, Steel Structures: Design and Behavior, Fifth Edition, Prentice Hall, 2005.

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

Advanced design of steel structural systems, tension and compression members, flexural beam design including lateral torsional buckling. Welded and bolted connections. Beam- column design and plastic steel design.

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 understand advanced structural steel design and behaviors.
* Student become informed about the optimum design criteria and design procedures for

steel structures

* Student can apply basic principles and design methods of steel structural members.
* Study can analyze and design steel buildings
* Student understand code requirements and specifications and understand the background of AISC code

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, 5, 6, 7

1. *Brief list of topics to be covered*

* Tension members
* Compression members
* Design of beams (including flexural torsional buckling)
* Design of bolted connection
* Design of Composite members
* Welded connections
* Design of beam columns (Direct Design Method of AISC)
* Design of Base Plates
* Design of Plate Girders