

# Masters of Science Program in Advanced Structural Design

## M.S. Degree Requirements

The total course requirement for a M.S. degree is 12 course units, at least 9 of them must be taken for grade, at most 3 course units may be research (with thesis) or at most 2 course units may be project or independent study. For the Advanced Structural Design focus, a total of 16 courses is recommended.

Sample courses for the Advanced Structural Design focus:

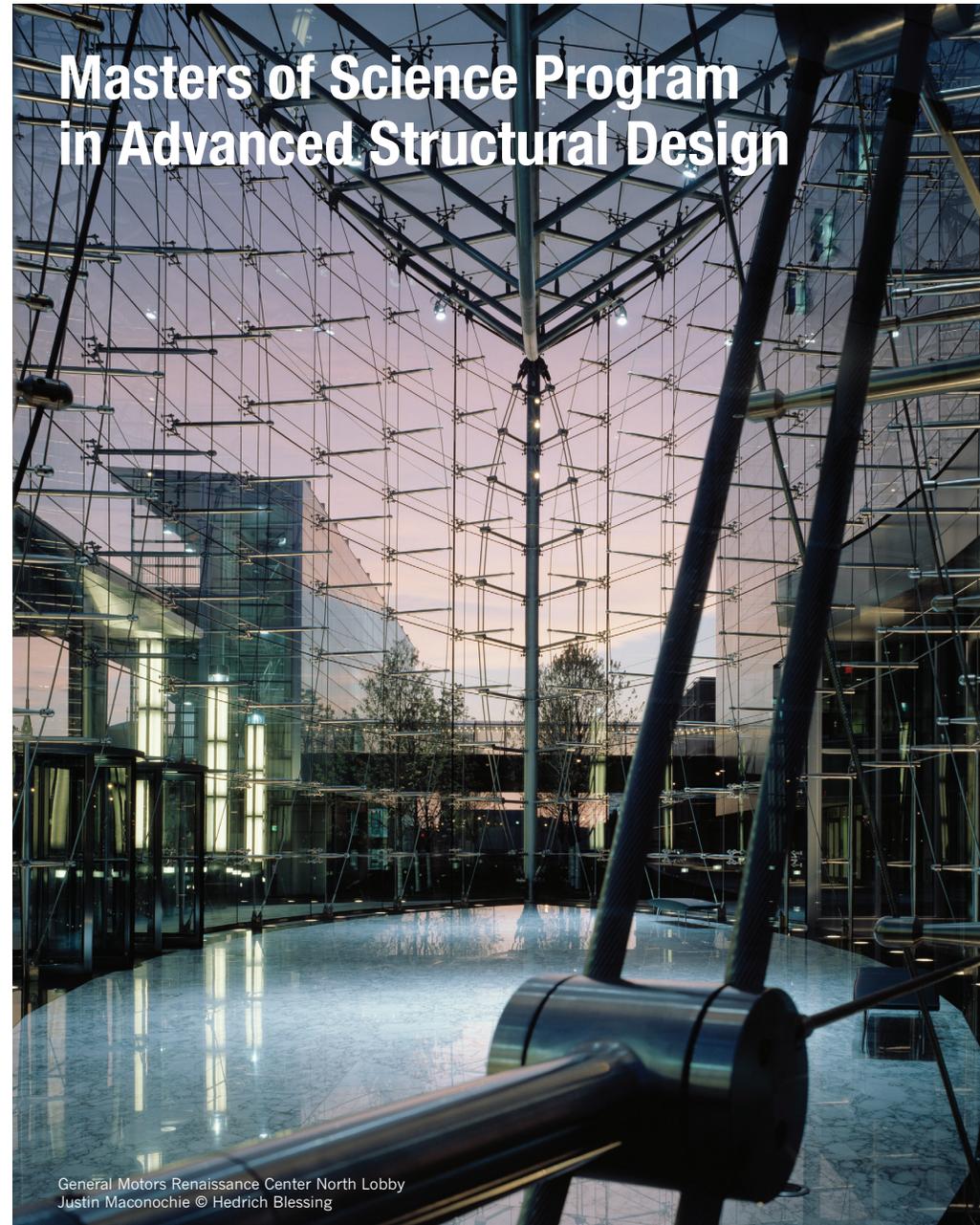
CIV_ENV 306	Uncertainty Analysis
CIV_ENV 319	Theory of Structures II
CIV_ENV 320	Structural Analysis—Dynamics
CIV_ENV 323	Structural Steel Design
CIV_ENV 325	Reinforced Concrete Design
CIV_ENV 327	Finite Elements Methods
CIV_ENV 414	Mechanics of Composite Materials
CIV_ENV 415	Theory of Elasticity
CIV_ENV 417	Mechanics of Continua
CIV_ENV 422	Inelastic Analysis of Structures
CIV_ENV 424	Stability of Structures
CIV_ENV 425	Behavior of Reinforced Concrete Structures
CIV_ENV 430	Cohesive Fracture and Scaling
CIV_ENV 450	Soil Mechanics, Foundations, and Retaining Structures
CIV_ENV 495	Structural Systems and Optimization
CIV_ENV 495	Behavior of Steel Structures
CIV_ENV 512	Structural Engineering & Mechanics Seminar

Visit us at <http://cee.northwestern.edu>

Academic Coordinator: **Janet Soule**

[j-soule@northwestern.edu](mailto:j-soule@northwestern.edu)

(847) 491-7462



General Motors Renaissance Center North Lobby  
Justin Maconochie © Hedrich Blessing

**McCormick**

Northwestern Engineering

**Civil and Environmental Engineering**

# Longer, Taller, Lighter: Northwestern University's Program in Advanced Structural Design

The Department of Civil and Environmental Engineering at Northwestern University McCormick School of Engineering and Applied Science has launched a new focus, Advanced Structural Design, in the Masters of Science program in Structural Engineering and Infrastructure Materials. This unique focus is intended to train the next generation of structural designers, and prepares them to create the longer, taller, and lighter structures the world will see in the coming decades. The challenging curriculum is built to give students the critical tools they need to be truly innovative; this knowledge will allow them to differentiate themselves in the industry, and will serve them their entire careers.

The program has been developed through the joint effort of Northwestern's world-renowned structural mechanics faculty and elite Chicago-based structural design firms. The training puts a particular emphasis on theoretical and behavioral studies, with coursework in advanced structural analysis, theoretical and applied mechanics, material behavior, and many other areas. The program eschews training specific to current structural design codes and focuses on the tools necessary to interpret, utilize and even develop the structural design codes of the future.

Students enrolled in the program are eligible for a limited number of competitive structural research and design fellowships. These fellowships allow students the opportunity to work side-by-side with practicing engineers at major Chicago design firms, to apply their knowledge to innovative structural design projects. Northwestern's presence in the Chicago area, a long-standing hotbed of structural innovation, makes these fellowships a unique experience that will launch the careers of the future's next great structural designers.

*For more information, including application materials, please contact:*

**Prof. Gianluca Cusatis, Ph.D.**

*g-cusatis@northwestern.edu*  
SEIM coordinator

**Prof. Karen Chou, Ph.D., P.E.**

*karen-chou@northwestern.edu*  
MS of SEIM coordinator

**“Northwestern University’s Advanced Structural Design program is intended to challenge the student to develop a deep, fundamental understanding of the theory and behavior of structures. It is this knowledge that will equip the graduates of this program to lead the next generation of structural engineering designers in creating new and exciting structures and structural systems.”**

*William F. Baker, PE, SE, NAE, FASCE,  
Partner in Charge of Structural Engineering,  
Skidmore, Owings & Merrill LLP*



Burj Khalifa (formerly Burj Dubai)  
Nick Merrick © Hedrich Blessing



Ruck-A-Chucky Bridge  
© Hedrich Blessing



Broadgate - Exchange House  
© Richard Waite



San Francisco Airport International Terminal  
© Tim Hursley