

## NORTHWESTERN UNIVERSITY MASTERS OF SCIENCE PROGRAM IN STRUCTURAL ENGINEERING 2019-2020

The MS in STR requires 12 course units in addition to the STR Seminar.

Track		1 <sup>st</sup> Quarter/Fall	2 <sup>nd</sup> Quarter/Winter	3 <sup>rd</sup> Quarter/Spring
<b>Required Courses</b>		<b>Theory of Plates and Shells (CEE 410)</b> <b>Stability of Structures (CEE 424)</b> <b>Seminar (CEE 512 – zero units)</b>	<b>Theory of Elasticity (CEE 415)</b> <b>Seminar (CEE 512 – zero units)</b>	<b>Dynamics of Structures (CEE 320)</b> <b>Seminar (CEE 512 – zero units)</b>
<b>Professional Tracks<sup>1</sup></b>	Design <sup>2</sup>	Structural Design 1 (CEE 495)	Structural Design 2 (CEE 495)	Structural Design 3 (CEE 495)
	Research <sup>3</sup>	Research (590)	Research (590)	Research (590)
<b>Approved list of electives</b>		Matrix Analysis of Structures (CEE 423) Mechanics of Continua (CEE 417) Finite Elements (CEE 327) Uncertainty Analysis (CEE 306) Mechanics of Composites (CEE 414) Design of Sustainable Urban Developments (CEE 387) Engineering Project Management (CEE 330) Numerical Solution of Partial Differential Equations (ES-APPM 446-1) Independent Study (CEE 499)	Reinforced Concrete Design (CEE 325) Steel Design (CEE 323) High Performance Building Design (CEE 386) Cohesive Fracture (CEE 430) Properties of Concrete (CEE 321) Plasticity and Limit Analysis (CEE 455) Advanced Finite Elements-1 (CEE 426-1) Computational Nonlinear Analysis (ME 495) Applied Computational Fluid Dynamics and Heat Transfer (ME 395) Independent Study (CEE 499)	Energy Geostrucures (CEE 395) Building Physics (CEE 395) Poromechanics (CEE 495) Mechanics of Vibrations (ME 363) Advanced Finite Elements-2 (CEE 426-2) Experimental Solid Mechanics (CEE 413) High Performance Scientific Computing (ES-APPM 444) Independent Study (CEE 499)

**Notes:**

<sup>1</sup> Students must select one track (either Design or Research) and commit to 3 quarters of study in the selected track.

<sup>2</sup> For the Design track, students must complete all three units, and must begin the track in fall quarter. The Design track can be completed in one academic year.

<sup>3</sup> For the Research track, students must take initiative to identify (1) a research advisor willing to support study and (2) a topic that will result in a scholarly thesis. The Research track will in almost all cases take longer than one academic year to complete. The research work need not begin in fall quarter of the first year, and can begin with a CIV\_ENV 499 unit of independent study (this unit can count as one of the required 590 units)