

## NORTHWESTERN UNIVERSITY MASTERS OF SCIENCE PROGRAM IN STRUCTURAL ENGINEERING 2024-2025

Track	1 <sup>st</sup> Quarter/Fall	2 <sup>nd</sup> Quarter/Winter	3 <sup>rd</sup> Quarter/Spring
<b>Required Courses</b>	Seminar (CEE 512 – zero units)	Stability of Structures (CEE 424) Seminar (CEE 512 – zero units)	Theory of Plates and Shells (CEE 410) Seminar (CEE 512 – zero units)
<b>Research Track<sup>1</sup></b>	<b>The Research Track requires 9 course units + 3 research units (590) in addition to the STR Seminar. BS-MS students can double count 3 units from the BS.</b>		
<b>Recommended list of electives</b>	<b>Mechanics of Continua (CEE 417)<sup>2</sup></b> Matrix Analysis of Structures (CEE 423) Prestressed Concrete Design (CEE 421) Finite Elements (CEE 327) Inelastic Structures (CEE 422) Experimental Solid Mechanics (CEE 413)	<b>Dynamics of Structures (CEE 320)<sup>3</sup></b> Advanced Finite Elements-1 (CEE 426-1) Properties of Concrete (CEE 321) Constitutive Models for Soils (CEE 454) Structural Optimization (CEE 495) Building Enclosure Design (CEE 395)	<b>Theory of Elasticity (CEE 415)<sup>2</sup></b> Cohesive Fracture (CEE 430) Advanced Finite Elements-2 (CEE 426-2) <b>Mechanics of Vibrations (ME 363)<sup>3</sup></b> Building Science I (CEE 388-1) Unsaturated Soil Mechanics (CEE 452) High Performance Building Design (CEE 386)
<b>Other approved electives</b>	Independent Study (CEE 499) Soil Mechanics (CEE 450-1) Uncertainty Analysis (CEE 306) Design of Sustainable Urban Developments (CEE 387) Numerical Solution of Partial Differential Equations (ES-APPM 446-1)	<b>Reinforced Concrete Design (CEE 325)<sup>4</sup></b> Applied Computational Fluid Dynamics and Heat Transfer (ME 395) Independent Study (CEE 499)	<b>Steel Design (CEE 323)<sup>4</sup></b> High Performance Scientific Computing (ES-APPM 444) Independent Study (CEE 499)

**Notes:**

<sup>1</sup> For the Research track, desire to complete this track is not sufficient: students must 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).

<sup>2</sup>Either CEE 415 or CEE 417 is required.

<sup>3</sup>Either CEE 320 or ME 363 required. **CEE 320 strongly encouraged.**

<sup>4</sup>Required if not taken at the undergraduate level.