

NORTHWESTERN UNIVERSITY MASTERS OF SCIENCE PROGRAM IN STRUCTURAL ENGINEERING

2021-2022

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

Track		1 st Quarter/Fall	2 nd Quarter/Winter	3 rd Quarter/Spring
Required Courses		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)
Professional Tracks¹	Design ²	Structural Design 1 (CEE 495)	Structural Design 2 (CEE 495)	Structural Design 3 (CEE 495)
	Research ³	Research (Independent Study 499)	Research (590)	Research (590)
Recommended list of electives		Mechanics of Continua (CEE 417)⁴ Dynamics of Structures (CEE 320)⁵ Matrix Analysis of Structures (CEE 423) Prestressed Concrete Design (CEE 421) Mechanics of Composites (CEE 414) Finite Elements (CEE 327) Building Science I (CEE 395)	Theory of Elasticity (CEE 415)⁴ Advanced Finite Elements-1 (CEE 426-1) Computational Nonlinear Analysis (ME 495) Properties of Concrete (CEE 321) Foundation Engineering (CEE 450-2) Building Science II (CEE 395)	Cohesive Fracture (CEE 430) Energy Geostuctures (CEE 353) Mechanics of Vibrations (ME 363)⁵ Advanced Finite Elements-2 (CEE 426-2) Experimental Solid Mechanics (CEE 413) Computational Geotechnics (CEE 456) High Performance Building Design (CEE 386)
Other approved electives		Uncertainty Analysis (CEE 306) Design of Sustainable Urban Developments (CEE 387) Engineering Project Management (CEE 330) Numerical Solution of Partial Differential Equations (ES-APPM 446-1) Soil Mechanics (CEE 450-1)	Steel Design (CEE 323)⁶ Applied Computational Fluid Dynamics and Heat Transfer (ME 395) Independent Study (CEE 499) Unsaturated Soil Mechanics (CEE 452)	Reinforced Concrete Design (CEE 325)⁶ High Performance Scientific Computing (ES-APPM 444) Independent Study (CEE 499)

Notes:

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

² 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.

³ 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).

⁴ Either CEE 415 or CEE 417 is required

⁵ Either CEE 320 or ME 363 required. **CEE 320 strongly encouraged.**

⁶ Required if not taken at the undergraduate level.