# NORTHWESTERN UNIVERSITY MASTERS OF SCIENCE PROGRAM IN STRUCTURAL ENGINEERING

**The MS in STR requires 12 course units (6 core courses + 6 electives) in addition to the STR Seminar.**

| Track | 1st Quarter/Fall | 2nd Quarter/Winter | 3rd Quarter/Spring |
|---|---|---|---|
| **Recommended:**<br><br>**4 Courses/Quarter plus**<br>**STR Seminar** | **Dynamics of Structures (320)[1]** | **Theory of Structures II (319)** | **Pre-stressed Concrete Structures (421)** |
| | **Finite Elements Methods (327)** | **Theory of Plates and shells structures (495)** | 2nd Course from approved list † |
| | **Mechanics of Continua I (417)[2]** or course from approved list† | **Theory of Elasticity (415)[2]** or course from approved list† | 3rd Course from approved list † |
| | 4th Course from approved list † | 4th Course from approved list † | 4th Course from approved list † |
| | **STR Seminar (512)[3] – no tuition zero credit seminar** | | |
| **†Approved list of electives** | Architecture Engineering & Design I (385-1), F<br>Experimental Solid Mechanics (413), F<br>Inelastic Analysis of Structures (422), F<br>Method of Applied Math (ES311)[7]<br>Advanced Soil Mechanics 1 (450-1), F<br>Forensic Engineering (395), V<br>Advanced Steel Design (495-20), V<br>Uncertainty Analysis (306), F<br>Differential Geometry (MATH 342)<br>Independent Project/Study (499)[5] | Architecture Engineering & Design II (385-2), W<br>Concrete Design (325)[4], W<br>Cohesive Fracture and Scaling (430), W<br>Mechanics of Composite Materials I (414-1), W<br>Advanced Finite Elements Method (426-1), W<br>Advanced Soil Mechanics II (450-2), W<br>Foundation Design (352), W(O)<br>Independent Project/Study (499)[5] | Architecture Engineering & Design III (385-3), S<br>Steel Design (323)[4], S<br>Computational Forensics and Failure Analysis (395), S<br>Structural System and Optimization, V<br>Behavior of RC Structure (425), V<br>Mechanics of Composite Materials II (414-2), S<br>Advanced Soil Mechanics III (450-3), S<br>Independent Project/Study (499)[5] |
| **Design Practice option** | | MS Design Project (495) with a required zero unit pre-requisite course (504) in Winter quarter | |
| **Thesis option** | Research (590)[6] or Independ Study (499)[5] | Research (590)[6] | Research (590)[6] |
| **Simulation Driven Structural Engrg.** | Finite Elements Methods (327) | Advanced Finite Elements Method (426-1), W | Computational Forensics and Failure Analysis (395), S |

*Note:* required courses shown in **bold** face and/or shaded cells and are **required** for students who choose post MS plan of Engineering Practice. Failure to satisfactorily meet the required course may delay your graduation. If you want to waive the required course requirement, the instructor of the course must approve the waiver and report the decision in GSTS. For students who choose the thesis option, your curriculum plan may deviate from above and must be approved by your thesis advisor and a change of advisor may be necessary. For students interested in architecture engineering and design (AED), they may want to take the sequence of 385 courses highlighted in the Approved List of Electives.

[1] numbers in parentheses are Civ_Env course numbers unless otherwise stated
[2] either 417 or 415 is required
[3] additional professional development seminars at 5 pm on Wednesday are **required** for students who choose post MS plan of Engineering Practice.
[4] must take these courses in the appropriate quarters if not taken as an undergraduate
[5] **maximum of 1 unit** of CivEnv 499 may be used in M.S. program; must submit petition form to CEE
[6] A thesis is required for Civ_Env 590, **min 1 unit and max 3 units**. Grading is P/N.
[7] To prepare for 424 and 422