NORTHWESTERN UNIVERSITY MASTER OF SCIENCE IN CIVIL & ENVIRONMENTAL ENGINEERING: ARCHITECTURAL ENGINEERING AND SUSTAINABLE DESIGN SPECIALIZATION

2026-2027

The recommended program includes **12 courses** in addition to the Built Environment Professional Development Seminar Series - CIV_ENV 512-1/2/3 (zero credit). The 3 core courses, spanning over three quarters, are compulsory. At least 3 courses from the "Sustainability Cores" are mandatory. Students can choose the other 6 courses from the "Sustainability Cores" or the other approved electives in the two focus areas. Only up to 3 courses can be picked from the Sustainability+ focus. The MS Thesis Option includes 9 courses + 3 quarters of research with a thesis (CIV ENV 499 is graded, whereas CIV ENV 590 is not and is only used for continuing research purposes). If choosing this track, students cannot pick the courses from the "Sustainability+" focus.

		1st Quarter/Fall	2nd Quarter/Winter	3rd Quarter/Spring	4th Quarter/Fall
4 Courses/Quarter and the Seminar Series		Built Environment Professional Development Seminar Series (CIV_ENV 512-1, 2, 3) – no tuition zero credit seminar is required for MS.			
		Core Course: Building Science: Fundamentals (Chinazzo) – CIV ENV 388-1	Core Course: Towards Carbon-Neutral Built Environment (Jewett) – CIV ENV 395*	Core Course: Climate-Adaptive Design in the Built Environment (Stein-Montalvo) – CIV ENV 395*	
		2nd Course: Choose from Sustainability Cores or Other Electives	2nd Course: Choose from Sustainability Cores or Other Electives	2nd Course: Choose from Sustainability Cores or Other Electives	
		3rd Course: Choose from Sustainability Cores or Other Electives	3rd Course: Choose from Sustainability Cores or Other Electives	3rd Course: Choose from Sustainability Cores or Other Electives	
		4th Course: Choose from Sustainability Cores or Other Electives	4th Course: Choose from Sustainability Cores or Other Electives	4th Course: Choose from Sustainability Cores or Other Electives	
Sustainability Cores		• Sustainability: The City (Gray) – CIV ENV 368 • Design of Sustainable Urban Developments (Mozina) – CIV ENV 387 • Timber, Masonry, & Hybrid Structures Design (Garcia) – CIV ENV 395	• Building Science: Applications (Chinazzo) – CIV ENV 388-2 • Façade engineering (Babaian) – CIV ENV 395 • Ecohydrology (Packman) – CIV ENV 346	• High Performance Architectural Design (Thorton Tomasetti) – CIV ENV 386 • Energy Geostructures and Geosystems (Rotta Loria) – CIV ENV 353 • Indoor Air Quality (Hartmann) – CIV ENV 395	

Other approved Electives	Sustainability+ focus[3]		• Electrify Everything: Beneficial Electrification, Electric Vehicles, and Beyond (Benz) – ISEN 422 • Sustainability in the Construction Industry (Michelle Halle Stern) – PROJ MGT 441 • Systems Thinking for Sustainable Design (Kessler) – PROJ MGT 446	• Breakthrough Energy Efficiency and Net Zero Buildings (Gowda) – ISEN 433 • Life Cycle Assessment: Business Applications (Arnold) – ISEN 474 • Thermal Energy Systems Design (Kulkarni) – ISEN 390, MECH_ENG 380 • Metrics of Sustainability (Michelle Halle Stern) – PROJ MGT 448	
	Data science/AI/ML focus	• Applied Mathematical Statistics (Chen) – IEMS 401[1] • Statistical Learning for Data Analysis (Apley) – IEMS 304[2] • Internet-of-Things Sensors, Systems, and Applications (Xia) – COMP ENG 365, 465	• Data Science for Urban Systems (Chen) – CIV ENV 374 • Statistical Learning for Data Analysis (Chen) – IEMS 304[2] • Statistical Learning for Data Analysis (Lu) – IEMS 402[1]	• Choice Modeling in Engineering (Stathopoulos) – CIV ENV 377 • Data Analytics for Transportation and Urban Infrastructure Applications (Chen) – CIV ENV 474 • Statistical Learning for Data Analysis (Lu) – IEMS 304[2] • Introduction to Statistical Learning (Wang) – IEMS 301[1]	

MS Thesis Option	Research (Need an advisor/PI, 9 Courses are required and at least 3 quarters of research)	• *Finding an advisor*	• Individual Research Project (499)/ Research Project (590)	• Individual Research Project (499)/ Research Project (590)	• Research Project (590)

* Courses will be offered starting in AY 2026-2027
[1] Students should have the stated prerequisites.
[2] Prerequisites: probability and calculus-based statistics using R. Because it is a required course for IEMS majors and a co-requisite for the Kellogg CPU, they give priority to undergraduate students for course registration. Graduate students admitted as space allows.
[3]Students can choose no more than three courses in this focus area.