

INFRASTRUCTURE SYSTEMS ENGINEERING – ISE

FALL			SPRING		
CE 5020	Introduction to GIS	3	CE 5000	Management of Large Scale Projects	3
CE XXXX	ISE Core (1)	3	CE XXXX	ISE Core (1)	3
CE XXXX	ISE Core (1)	3	CE XXXX	ISE Core (1)	3
	SSRR Elective (2)	3		SSRR Elective (2)	3
	Technical Elective (3)	3		Technical Elective (3)	3
		15			15

- (1) IS Core – Students must select four courses from the following lists or as approved by the student's advisor. To ensure suitable breadth, students must take at least one course from each group.

Group A – Geotechnical, Environmental, and Water Resources Engineering

CE 5240	Groundwater Hydrology and Contaminant Transport
CE 5700	Foundations
CE 6130	Advanced Geotechnical Engineering
CE 6220	Water Chemistry
CE 6230	Hydrology
CE 6260	Environmental Microbiology and Biological Waste Treatment
SYS 6070	Environmental Systems Processes <i>(not approved for students with a BS in CE)</i>

Group B – Transportation Engineering

CE 5400	Traffic Operations
CE 6410	Introduction to Transportation Planning
CE 6420	Public Transportation
CE 6430	Intermodal Transportation
CE 6440	Intelligent Transportation Systems
CE 6450	Transportation Safety Design
CE 6470	Transportation Economics

- (2) Systems, Sustainability, Resilience, and Risk (SSRR) electives – students must complete two courses from the following list:

ARCH 5150	Global Sustainability
CE 5500	GIS Resilience
CE 6009	The Art and Science of Systems Modeling
CE 6030	Green Engineering
CE 6250	Environmental Systems Modeling and Management
CE 6490	Transportation Data Analysis and Modeling
CE 6460	Introduction to Integrated Transportation Systems Models
CE 6500	Hydroinformatics
PLAN 5453	Healthy Cities
PLAN 5810	Sustainable Communities
SYS 6001	Introduction to Systems Analysis & Design
SYS 6050	Risk Analysis

- (3) Technical electives may include any technical course at or above the 5xxx level approved by the academic adviser. One elective may constitute research or a professional internship (i.e., CE 6995 - refer to the CE website for details).
- (4) Pre-requisites: college calculus through Ordinary Differential Equations, college physics, and college chemistry; plus, Introduction to Environmental Engineering (CE 2100 or equivalent), Introduction to Geotechnical Engineering (CE 3710 or equivalent), and Transportation Infrastructure Design (CE 3400 or equivalent).
- (5) Students may be permitted to modify this framework, pending approval of their academic advisor and the CE Director of Graduate Studies. Additionally, online courses from Virginia's CGEP program may be suitable to meet the requirements for this degree. See cgep.virginia.gov/courses for current course offerings.