

# CERTIFICATE IN INFRASTRUCTURE ENGINEERING AND MANAGEMENT

The Certificate in Infrastructure Engineering and Management is a preparatory coursework-only non-degree program designed to be taken standalone for gaining introductory knowledge in infrastructure systems, planning, and engineering, or in preparation

for gaining advanced knowledge in the Master of Public Works (Infrastructure Engineering and Management) program.

## Curriculum

Code	Title	Credit Hours
<b>Required Courses</b>		<b>(6)</b>
Select a minimum of two courses from the following (with adviser consent):		6
CAE 523	Statistical Analysis of Engineering Data	3
CAE 539	Introduction to Geographic Information Systems	3
CAE 570	Legal Issues in Civil Engineering	3
CAE 574	Economic Decision Analysis in Civil Engineering	3
CAE 575	Systems Analysis in Civil Engineering	3
MATH 525	Statistical Models and Methods	3
PA 501	Introduction to Public Administration	3
PA 551	Public Infrastructure Management	3
<b>Elective Courses</b>		<b>(6)</b>
Select a minimum of two courses from the following (with advisor consent): <sup>1</sup>		6
CAE 408	Bridge and Structural Design	3
CAE 416	Facility Design of Transportation Systems	3
CAE 417	Railroad Engineering and Design	3
CAE 419	Introduction to Transportation Engineering and Design	3
CAE 470	Construction Methods and Cost Estimating	3
CAE 471	Construction Planning and Scheduling	3
CAE 472	Construction Site Operation	3
CAE 473	Construction Contract Administration	3
CAE 482	Hydraulic Design of Open Channel Systems	3
CAE 486	Soil and Site Improvement	3
CAE 504	Seismic Retrofit and Earthquake Hazard Reduction	4
CAE 506	Building Envelope Rehabilitation	3
CAE 508	Advanced Bridge Engineering	3
CAE 514	Mathematical Methods for Structural Engineering	3
CAE 518	Advanced Reinforced Concrete	3
CAE 519	Structural Forensic Engineering	3
CAE 520	Buckling of Structures	4
CAE 525	Advanced Steel Structures	4
CAE 540	Asphalt and Concrete Mix Design	3
CAE 541	Pavement Evaluation and Management	3
CAE 543	Demand Models for Urban Transportation	3
CAE 544	Urban Transportation Planning	4
CAE 545	Traffic Operations and Flow Theory	3
CAE 546	Public Transportation Systems	3
CAE 547	Advanced Traffic Engineering	3
CAE 548	Transportation Systems Management	3
CAE 549	Transportation Economics, Development and Policy	3
CAE 551	Prestressed Concrete	3
CAE 555	Transportation Systems Evaluation	3

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CAE 561	Structural Reliability and Probabilistic Bases of Design	3
CAE 562	Engineering Behavior of Soil	4
CAE 564	Design of Foundations, Embankments and Earth Structures	4
CAE 565	Rock Mechanics and Tunneling	4
CAE 566	Earthquake Engineering and Soil Dynamics	4
CAE 568	Transportation Asset Management	3
CAE 580	Intelligent Transportation Systems	3
CAE 581	Algorithms in Transportation	3
CAE 589	Groundwater Hydrology and Sampling	3
CAE 590	Geotechnical Landfill Design and Maintenance	3
ENVE 404	Water and Wastewater Engineering	3
ENVE 528	Modeling of Environmental Systems	3
ENVE 551	Industrial Waste Treatment	3
ENVE 580	Hazardous Waste Engineering	3

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**Total Credit Hours**

**12**

<sup>1</sup> If more than two courses from the required courses list are taken, those additional courses can be applied as electives