



Graduate Course Offerings in Transportation Engineering at Villanova University

**Civil and Environmental Engineering Department
800 Lancaster Ave.
Villanova, PA 19085**

**Dr. Leslie McCarthy, PE
leslie.mccarthy@villanova.edu, 610-519-7917**

**Dr. John McFadden, PE
jmcfadden@starpower.net, 240-277-0536**

<http://www.villanova.edu/engineering/departments/civil/graduate/>

Students interested in transportation engineering engage in interdisciplinary programs that combine the core transportation graduate courses with courses in geotechnical and structural engineering, leading to a Master of Science in Civil Engineering or Doctorate in Engineering. This evening graduate program provides practicing professionals an opportunity to pursue advanced study on either a part-time or full-time basis. Thirty credits are required to earn a MSCE or Ph.D. and part-time students typically earn all 30 credits through course work (10 classes).

Research

Students pursuing full-time study perform research that culminates in the submission of a thesis. Full-time students usually earn 24 credits through course work and 6 credits through research. Transportation graduate students will likely perform research on context sensitive solutions in infrastructure, mechanistic-empirical pavement design (MEPDG), retroreflectivity of traffic signs and pavement markings, nondestructive pavement testing, or establishing pavement performance targets for highway construction contracts.

Courses

All of the transportation courses are offered in the evenings to accommodate both full and part time students. All of these courses have undergraduate Civil Engineering Materials and/or Transportation Engineering (or equivalent) as a prerequisite.

The transportation courses, which are all 3 credits, are listed below. These classes are typically held on Tuesday or Wednesday evenings from 6:15 pm to 9:15 pm.

<i>Course number</i>	<i>Title</i>	<i>Instructor</i>
CEE 7303	Pavement Design & Dynamic Response	Dr. Leslie McCarthy
CEE 8201	Urban Transportation Engineering	Dr. John McFadden
CEE 8202	Transportation Planning & Operations	Dr. John McFadden
CEE 8203	Traffic Engineering	Dr. John McFadden
CEE 8205	Highway Safety	Dr. Leslie McCarthy
CEE 8206	Construction Project Management	Dr. Leslie McCarthy
CEE 8207	Design of Sustainable Transportation Systems	Dr. Leslie McCarthy
CEE 8303	Urban Planning	Dr. John McFadden
CEE 8439	CE Materials	Dr. Aleksandra Radlinska

Who should take these courses? What are they about?

CEE 7303 Pavement Design & Dynamic Response - This course would be of interest to students specializing in transportation and geotechnical engineering. Rigid and flexible pavement design, bituminous materials and mixture design, 3Rs of pavement structures will be taught.

CEE 8201 Urban Transportation Engineering - This course would be of interest to students specializing in transportation with emphasis in urban planning. Transit and other mode characteristics and transportation network analyses through trip generation and traffic assignment covered.

CEE 8202 Transportation Planning & Operations - This course would be of interest to students specializing in transportation engineering with emphasis in planning. Planning and operations will be included, based on recently developed capacity analyses of transportation facilities and networks.

CEE 8203 Traffic Engineering - This course would be of interest to students specializing in transportation engineering. Road user and vehicle characteristics, stream flow characteristics, freeway operations, speed studies, traffic control and management will be covered.

CEE 8205 Highway Safety - This course would be of interest to students specializing in transportation engineering. Course includes factors that contribute to highway crashes, techniques to improve roadway safety, geometric design elements, and accident reconstruction techniques.

CEE 8206 Construction Project Management - This course would be of interest to students specializing in transportation, structural, and geotechnical engineering. Course includes scheduling, changes/delays/claims management, systematic design review, value engineering, quality control/quality assurance, and innovative contracting.

CEE 8207 Design of Sustainable Transportation Systems - This course would be of interest to students specializing in transportation, structural, and geotechnical engineering. Environmental consequences and transportation systems, context sensitive solutions, infrastructure asset management, pavement preservation, accelerated construction techniques, and use of innovative materials in construction will be presented.

CEE 8439 Civil Engineering Materials - This course would be of interest to students specializing in transportation, structural, and geotechnical engineering. Durability, fracture, fatigue, corrosion, non-destructive tests and properties of metals, concrete and wood will be taught with use of laboratory testing and data analysis.

Transportation Engineering Graduate Program at Villanova University - Planned Course Offerings (Fall 2009 – Fall 2013)

Semester	Transportation Courses	Other Elective Courses
Fall 2009	CEE 7303 – Pavement Design & Dyn Res CEE 8201 – Urban Transportation Eng	CEE 7001 – Business Basics for Engr CEE 8102 – Foundation Engineering CEE 8435 – Reinforced Concrete ME 7040 – Intro Finite Element Analysis
Spring 2010	CEE 8202 – Transportation Plan & Ops	CEE 8103 – Geosynthetics CEE 7002 – Management for Engineers ME 8350 – Applied Fracture Mechanics
Summer 2010	CEE 8206 – Construction Project Mgmt	CEE 8311 – Engineering Geology
Fall 2010	CEE 8439 – Civil Engr Materials CEE 8205 - Highway Safety CEE 8303 – Urban Planning	CEE 7001 – Business Basics for Engr ME 7040 – Intro Finite Element Analysis
Spring 2011	CEE 8203 - Traffic Engineering	CEE 7002 – Management for Engineers CEE 8105 – Advanced Soil Mechanics CEE 8420 – Composite Materials
Summer 2011	CEE 8207 – Design of Sustainable Transpo Systems	CEE 8311 – Engineering Geology CEE 8508 – Stormwater Management
Fall 2011	CEE 7303 – Pavement Design & Dyn Res CEE 8201 – Urban Transportation Eng	CEE 7001 – Business Basics for Engr CEE 8102 – Foundation Engineering CEE 8435 – Reinforced Concrete ME 7040 – Intro Finite Element Analysis
Spring 2012	CEE 8202 – Transportation Plan & Ops	CEE 7002 – Management for Engineers CEE 8103 – Geosynthetics ME 8350 – Applied Fracture Mechanics
Summer 2012	CEE 8206 – Construction Project Mgmt	CEE 8311 – Engineering Geology
Fall 2012	CEE 8439 – Civil Engr Materials CEE 8205 - Highway Safety CEE 8303 – Urban Planning	CEE 7001 – Business Basics for Engr ME 7040 – Intro Finite Element Analysis
Spring 2013	CEE 8203 - Traffic Engineering	CEE 7002 – Management for Engineers CEE 8105 – Advanced Soil Mechanics
Summer 2013	CEE 8207 – Design of Sustainable Transpo Systems	CEE 8311 – Engineering Geology CEE 7402 - Forensic Engineering CEE 8508 – Stormwater Management
Fall 2013	CEE 7303 – Pavement Design & Dyn Res CEE 8201 – Urban Transportation Eng	CEE 7001 – Business Basics for Engr CEE 8102 – Foundation Engineering CEE 8435 – Reinforced Concrete ME 7040 – Intro Finite Element Analysis

Note: Additional course offerings in the Mechanical Engineering Department (ME 7040, ME 8350) may be counted toward a degree as electives, upon prior approval by academic advisor. Contact Mechanical Engineering Department for scheduling information.

Additional course offerings in the Mathematics Department (MAT 7404, MAT 7405, MAT 8435) may be counted toward a degree as electives, upon prior approval by academic advisor. Contact the Mathematics Department for scheduling information.