When the Villanova University Department of Civil and Environmental Engineering received an invitation to the AREMA Railroad Engineering Education Seminar (REES) in 2010, Dr. Leslie McCarthy eagerly accepted the offer to bring railway engineering back into the classroom. The response from both the railway industry and students alike has been overwhelmingly positive. The integration of railroads into the transportation curriculum is reviewed and generates interest from regional stakeholders such as DVRPC, SEPTA, CSX, ConRail, NJ Transit, and a number of Short Line Railroad Association members in both New Jersey and Pennsylvania.

The success of teaching railway engineering has been measured by using educational assessment tools. Results over the past two years have consistently shown an increase in student interest and knowledge level of railroads. A key element of this is the participation of regional guest speakers from the railway industry and field trips. A goal for the future? Participate in research related to railroads to sponsor masters or doctoral thesis projects.

**How do we know it’s working?**

After the 1\textsuperscript{st} year of railway courses, 1 graduating senior pursued a career with a Class 1 freight railroad. After the 2\textsuperscript{nd} year, 2 graduating seniors pursued careers in the railway field. Each spring, DVRPC hosts a student intern in the Office of Freight Planning to work on railroad-related projects.

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**Railway Engineering**

**At Villanova University**

**Undergraduate Course Offerings That Include Railway Engineering:**

1. **Introduction to Transportation Engineering** - required for sophomores
   *Introduces concepts of moving freight, safety, energy, and train performance*
2. **Transportation Facilities Design** - design elective for seniors
   *Includes design of railroad facilities including alignment, clearances, and track systems*
3. **Special Topics in Transportation** - technical elective for seniors
   *Includes mass transit, platform design, accessibility, line capacity, and traffic control*

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**Senior Capstone Design Projects: Centered Around Railroads**

In 2011: Amtrak Coatesville Station Re-Design & Upgrade (PennDOT)
In 2012: SEPTA Paoli-Thorndale Villanova Station Re-Design (SEPTA) - *featured in Volume 70, No. 11 of Passenger Transport magazine*

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**Graduate Course Offerings Related to Railway Engineering:**

1. **Railway Engineering** - every 18 months
   *Focused on introducing concepts related to freight, intermodalism, & High Speed Rail*
2. **Design of Sustainable Transportation Systems** - every 24 months
   *Focused on concepts related to various types of passenger rail and station design*