

Tennessee Technological University
Department of Civil & Environmental Engineering
CEE 5640/4640 – Highway Engineering

2017 Catalog Data:	CEE 5640/4640
Required Textbook:	<u>A Policy on Geometric Design of Highways and Streets, 2011 ed.</u> American Association of State Highway and Transportation Officials
Faculty Coordinator:	Steven M. Click, PE PhD
Participating Faculty:	n/a
Prerequisites:	CEE 3610 Transportation Engineering
Goal:	To introduce students to the intricacy of highway design through classroom instruction and a real-world design project.

Course learning objectives:

1. Learn about the intricacies of the highway design process, including its iterative process
2. Learn to choose appropriate design parameters to meet the purpose of a facility
3. Learn how horizontal, vertical, and cross section design elements impact one another.
4. Learn to choose appropriate intersection/interchange types for different facility types and topographies.
5. Learn to establish controlling values (minima, maxima, desirable/undesirable, preferred) and to select design values which support safety and efficiency.

Major Topics Covered:

- The Highway Design Process
- Horizontal Alignment of Low Speed Roadways
- Horizontal Alignment of High Speed Roadways
- Vertical Alignment of Roadways
- Cross Section Design for Roadways
- Intersection Design
- Interchange Design

Measurable outcomes:

Students will be expected to:

1. Describe the highway design process, including listing major steps.
2. Use the “Green Book” to identify appropriate project parameters for given conditions
3. Calculate horizontal, vertical, and cross section parameters and report them in a reasonable format for construction.
4. Discuss the process of developing horizontal, vertical, and cross section design, including interactions between relevant minima and maxima, impacts of design choices, and their take on preferred design.
5. Calculate intersection and interchange parameters.
6. Prepare and present a lecture on a relevant topic in highway design.