

CE 318 – HIGHWAY ENGINEERING

Type (check one): Required: X Elective:

2005-2006 Catalog Data: CE 318. Highway Engineering. Study of driver and vehicle characteristics as they relate to the geometric design of highways. Highway capacity and safety. Design of drainage structures. Highway materials and the structural design of flexible and rigid pavements. Students are required to submit plans for a design project assigned by the instructor. Discussion of transportation planning, land use/transportation relationships, economy, mass transit facilities and intermodal systems. Computer applications. Oral and written communication skills required. Prerequisite: CE 115. Offered in the Spring semester. *One semester, three credits.*

Prerequisites: CE 115

Co-Requisites: None

Textbook: Nicholas J. Garber & Lester A. Hoel, *Traffic and Highway Engineering*, Brooks/Cole Thompson Learning, Third Edition, 2002.

Other Required Materials: None

Other References: AASHTO Design Manual, Highway Capacity Manual and TDOT Design Manual

Instructor: Mr. Gene McGinnis, Assistant Professor of Civil and Environmental Engineering

Course Objectives: The course is designed to provide the students with a highway design experience involving the use of computer-aided design software, the evaluation of alternatives, the synthesis of design considerations, such as geometrics, drainage structures, and pavements.

Prerequisites by Topics: 1. Knowledge of coordinate geometry, horizontal and vertical curve calculations.

Topics: 1. The profession of Transportation Engineering
2. Characteristics of the driver, vehicle and the road
3. Traffic characteristics, capacity and level of service determination
4. Geometric design of highway facilities
5. Design discharge computations
6. Design of flexible and rigid pavements
7. The role of GIS and ITS in transportation

Class Schedule: Three 50-minute sessions per week.

Prepared by: Mr. Gene McGinnis, P.E.

Date: October 2005

**PROFESSIONAL COMPONENT:
CE 318 – HIGHWAY ENGINEERING**

Category (check one)	<input type="checkbox"/> Math/Basic Science <input checked="" type="checkbox"/> Engineering <input type="checkbox"/> General Education <input type="checkbox"/> Other
Design (check one)	<input type="checkbox"/> Significant <input checked="" type="checkbox"/> Some <input type="checkbox"/> None
Realistic Constraints (check all that apply)	<input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input type="checkbox"/> Sustainability <input type="checkbox"/> Manufacturability <input checked="" type="checkbox"/> Ethical <input checked="" type="checkbox"/> Health & Safety <input checked="" type="checkbox"/> Social <input checked="" type="checkbox"/> Political

Relationship to Program Outcomes:

Check all that apply:

- (a) an ability to apply knowledge of mathematics, science, and engineering
- (b) an ability to design and conduct experiments, as well as to analyze and interpret data
- (c) an ability to design a system, component, or process to meet desired needs
- (d) an ability to function on multi-disciplinary teams
- (e) an ability to identify, formulate, and solve engineering problems
- (f) an understanding of professional and ethical responsibility
- (g) an ability to communicate effectively
- (h) the broad education necessary to understand the impact of engineering solutions in a global and societal context
- (i) a recognition of the need for and an ability to engage in life-long learning
- (j) a knowledge of contemporary issues
- (k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice