

CET 251: Highway Engineering**Catalogue Course Description:**

This course covers the design and construction of highways. Topics include geometric design, earthwork computations, and drainage. Design of rigid and flexible pavements is also included.

Prerequisite(s): EGR 194, CET 105, CET 205, CET 218, MAT 140

Co-Requisite(s): none

Credit Hours:	Credit hours	Contact Hours
	Lab	0.0
	Lecture	3.0
	Total	3.0

Departmental Website: <http://www.midlandstech.edu/engineering.htm>

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Campus Mailbox: none

Personal Website: none

Class Schedule: **TBD**

Office Hours: **See office door posting**

Textbook(s): Principles of Highway Engineering and Traffic Analysis, 4th Edition, Mannerling, Washburn, and Kilareski, John Wiley & Sons, Inc.

Additional Textbooks/Readings/Material: Class notes and explanatory handouts
Problem solutions by instructor

Equipment: Scientific calculator

Course Objectives: Upon completion of this course the student will be familiar with the design concepts for highway design in transportation.

Course Outcomes and Competencies:

Intended Course Outcome: Students will apply knowledge of engineering technologies and competence in performing tasks used by engineering technicians/technologists in Civil Engineering.

Course Competencies:

- 1) Students will demonstrate the use of engineering techniques, skills and tools. (Supports TAC of ABET general program outcomes 2.a., 2.b., 2.c., 2.d., 2.e., 2.f., 2.g., 2.h., 2.i., 2.j. and CET program specific outcome 1).
- 2) Students will demonstrate the ability to utilize graphic techniques to produce engineering documents. (Supports TAC of ABET general program outcomes 8.a., 8.f and CET program specific outcome 1).

Performance Measurement Instrument and Success criteria:

Students will demonstrate competencies 1 and 2 by completing assignments and tests throughout the semester. Embedded questions within the Assignments and tests will be used in the assessment activity. Success goal is that 80% of the students will score 75% or better on each assessment activity.

Course Attendance: Students must attend at least 85% of scheduled lecture and lab hours. Students are responsible for all material and announcements presented, whether present or absent.

Withdrawal: Should the maximum allowable absences be exceeded prior to midterm, a “W” will be submitted to the registrar to be recorded on the student’s transcript. Should the maximum allowable absences be exceeded after midterm, a “W” will be submitted to the registrar if the student was passing the course at the time of withdrawal OR a “WF” will be submitted if the student was failing the course at the time of withdrawal.

Course Requirements: Administrative Requirements:

1. The grade I (Incomplete) will be given only where justifiable by extenuating circumstances. The remaining course work must be completed within the next school term and must be done at the student’s own initiative.
2. The student must make arrangements with the instructor for make-up tests and make-up assignments. This must be done within two days of the time of the test and within a day of any other assignment unless extended illness occurs.
3. Each student will be expected to come to all classes, including tests/exams, with a scientific calculator, the text book, and other normal supplies.

Academic Requirements:

1. Reading assignments are to be completed prior to class and students should be prepared to work assigned problems in class if called upon.
2. Homework problems are to be solved neatly in a logical, orderly procedure, and easy to be followed. Test problems should be solved the same way. No credit will be given for answers only. Appropriate work leading to the solution must precede the solution.
3. Some of the assignments will need to be worked using the research methods on the Internet.

Students are expected to work all the assignments. Problems worked or passed out in class should be retained and studied as well as examples given in the text.

Course Grading:

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|------------------------|-----|
| 1. Tests/quizzes/exams | 60% |
| 2. Topic reports | 20% |
| 3. Homework | 20% |

Grading Scale:

90-100	A	Superior Work
80-89	B	Good Work
70-79	C	Average Work
60-69	D	Below Average Work
Less than 60	F	Unsatisfactory Work

Special Procedures: none

Field Trips: some

Classroom Rules/Other:

Code of Conduct:

Students enrolled in the Civil Engineering Technology degree program are expected to conduct themselves in a professional manner, respectful of the rights of all students and instructors, and to exhibit the highest level of ethical behavior.

The following standards (in addition to those standards described in the current academic catalog) are considered the minimal standards for successful professional achievement:

1. All students shall receive equal, just and fair treatment regardless of race, gender, religion or age. Loud, abusive and disrespectful language in the classroom can result in dismissal from the classroom and a possible withdrawal from the course.
2. Sexual harassment is prohibited.
3. Cheating on quizzes, exams or scheduled classroom work that is defined as 'independent work' by the instructor is prohibited.
4. Smoking, eating or drinking or the use of tobacco products is prohibited in the classrooms and the laboratories.

5. Theft or unauthorized removal of equipment or supplies from a classroom or lab shall result in withdrawal from the course as well as legal action to resolve criminal conduct.
6. Illegal copying of software from classroom or laboratory computers is prohibited.

Special Needs Students:

If special accommodations are needed for students with disabilities, the student should contact the Counseling Services Office for assistance. Documentation regarding a specific disability is required for accommodation arrangements. Confidentiality of the information received will be maintained.

Campus Emergency Protocol:

Students and employees are asked to report safety concerns or suspicious activities to Campus Security at 7199(on campus), or 738-7199 (cell phone and off campus). In the event of an emergency, student and employee protocol is to immediately call Campus Security or local 911. If an emergency occurs, employees and students may seek additional information and instructions via MTC Information Centers, email, college Intranet, the MTC website, campus voice mail and loud speakers.

Course Topic Outline/Course Calendar with Assignments:

Lesson	Dates	Study Assignments
1.		Chapter One – Introduction to Highway Engineering and Traffic Analysis. Homework Assignment #1 – Problems at the end of the chapter and Essay Regarding Topics in Transportation
2.		Continuation of Chapter 1.
3.		Chapter Two – Road Vehicle Performance Homework Assignment #2 - Problems at the end of the chapter and Internet Research Regarding Topics in Transportation.
4.		Continuation of Chapter 2.
5.		Quiz/Test Chapters 1 and 2
6.		Chapter Three – Geometric Design of Highways Homework Assignment #3- Problems at the end of the chapter and Field Exercise for surveying.
7.		Continuation of Chapter 3.
8.		Continuation of Chapter 3.
9.		Quiz/Test Chapter 3.
10.		Chapter Four – Pavement Design Homework Assignment #4 – Problems at the end of chapter and research on other pavement design methods.
11.		Continuation of Chapter 4.
12.		Continuation of Chapter 4.
13.		Quiz/Test Chapter 4.
14.		Chapter Five – Fundamentals of Traffic Flow and Queing Theory Homework Assignment #5 – Problems at the end of chapter and field exercise on traffic flow at intersections and roadways.
15.		Continuation of Chapter 5.
16.		Continuation of Chapter 5.
17.		Possible guest speaker from SCDOT or field trip to Traffic Engineering.
18.		Quiz/Test Chapter 5.
19.		Chapter Six – Highway Capacity and Level of Service Analysis Homework Assignment #6 – Problems at the end of chapter and field exercise on highway capacity/LOS.
20.		Continuation of Chapter 6.
21.		Quiz/Test Chapter 6.

22. Chapter Seven – Traffic Control and Analysis at Signalized Intersections
Homework Assignment #7 – Problems at the end of chapter and field exercise on Signals.
23. Continuation of Chapter 6 – possible demo for signal warrants and program.
24. Chapter Eight – Travel Demand and Traffic Forecasting
Homework Assignment #8 – Problems at the end of chapter and Central Midlands Planning.
25. Quiz/Test - Chapters 7 & 8.
26. Review
27. Reading Day
28. Final Exam (cumulative)

NOTE: Holidays/School Breaks to be incorporated as appropriate to the semester.

PLEASE NOTE: Should change become necessary, the instructor reserves the right to adjust the requirements, pace, or scheduling of this course. Any change will be announced in class before it becomes effective.