

**CET 105: Surveying I****Catalogue Course Description:**

This course includes surveying theory and practice, care and use of instruments, traversing procedures, and computation of closure. Also included are differential and trigonometric leveling, and computation of the area of real property.

**Prerequisite(s):** MAT-110, EGT-106 or AET 110

**Co-Requisite(s):** MAT-111

<b>Credit Hours:</b>	Credit hours	Contact Hours
	Lab	1.0
	Lecture	2.0
	Total	3.0

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

**Instructor:** Dr. Wiley Graf  
**Office:** LET 221 F  
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**Departmental Assistant:** (803) 738-7807  
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**Campus Mailbox:** none  
**Personal Website:** none  
**Class Schedule:** **TBD**

**Office Hours:** **See office door posting**

**Textbook(s):** Elementary Surveying, An Introduction to Geomatics, Charles D. Ghilani and Paul R. Wolf, Prentice Hall, 12<sup>th</sup> Edition

Surveying I, CET-105, Wiley Graf (instructor notes)

**Additional Textbooks/Readings/Material:** none

**Equipment:** Scientific calculator HP 48 (supplied by the college)

**Course Objectives:** Upon completion of this course, the successful student will be able to operate level and total station instruments, and successfully carry out the companion calculations for a variety of field applications, including traversing procedures, computation of the area of real property, and computation of closure using differential and trigonometric leveling.

**Course Outcomes and Competencies:**

**Intended Course Outcome #1:** Students will understand the procedures and use of equipment related to surveying/geomatics

- 1) **Course Competencies:** Students will use modern surveying methods for land measurement and/or construction layout. (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., 2.k., 8.a., 8.c., 8.f. and CET program specific outcome 3).

**Performance Measurement Instrument and Success Criteria:**

Students will demonstrate competencies by completing assignments and tests throughout the semester. Embedded questions within the assignments and tests will be used in the assessment activity.

1. Lab 1, Observation
2. Labs 2-10, Observations
3. Exam 2, Q 26-40, and

**Intended Course Outcome #2:** Students will demonstrate the ability to analyze, organize, and assimilate civil engineering data and information

- 1) **Course Competencies:** Students will conduct, analyze and interpret experiments and apply experimental results. (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., 2.k., 8.a., 8.c., 8.f. and CET program specific outcome 5).

**2) Performance Measurement Instrument and Success Criteria:**

Students will demonstrate competencies by completing assignments and tests throughout the semester. Embedded questions within the assignments and tests will be used in the assessment activity.

1. Labs 1, 2, 4, and 7.
2. Exam 1, Q 27-34,
3. Exam 1, Q 35- 40,
4. Exam 2, Q 11-15, and
5. Homework 8.

**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 given-determine-solution format. 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 may involve Internet research methods.
4. Students are expected to work all of the assignments. Problems worked or passed out in class should be retained and studied, as well as examples given in the text.

**Course Grading:**

1. Tests 30%
2. Final Exam 20%
3. Quizzes 15%
4. Homework 20%
5. Labs 15%

**Grading Scale:**

90-100	A	Superior Work
80-90	B	Good Work
70-80	C	Average Work
60-70	D	Below Average Work
0-60	F	Unsatisfactory Work

**Special Procedures: none****Field Trips: none**

**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:**

<b>Lesson</b>	<b>Dates</b>	<b>Study Assignments</b>
1		Significant Digits and Conversion Factors
2		Trig Functions, Law of Sines, Law of Cosines
3		Differential Leveling
4		Differential Leveling
5		<b>Lab 1:</b> Differential leveling
6		Trigonometric Leveling
7		<b>Lab 2:</b> Trigonometric Leveling
8		Angles and Directions
9		Angles and Directions
10		EXAM #1
11		Closed Traverse
12		<b>Lab 3:</b> Location of Random Points
13		<b>Lab 4:</b> Closed Traverse
14		Using the HP48 Calculator
15		<b>Lab 5:</b> Closed Traverse Using the HP48 Calculator
16		<b>Lab 6:</b> Coupled Closed Traverse/Trig Leveling Using the HP48 Calculator
17		<b>Lab 7:</b> Construction Staking Using the HP48 Calculator
18		More HP48 applications
19		EXAM #2
20		Area Calculations
21		Existing Horizontal Control
22		<b>Lab 8:</b> Location of Inaccessible Points
23		Open Traverse
24		<b>Lab 9:</b> Open Traverse
25		<b>Lab 10:</b> Tying the SE Traverse to State Plane Coordinates
26		Reading Day
27		FINAL EXAM

**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.**