COURSE OUTLINE

Course Number	Course Title	Credits
CIV102	**Surveying II**	**3**
Hours: Lecture/Lab/Other	**Co- or Pre-requisite**	**Implementation Semester & Year**
2/3	**CIV101 or permission of the instructor**	**Spring 2022**

Catalog description:
Application of the fundamentals and techniques achieved in elementary surveying to solve additional problems in vertical curves, horizontal curves, traversing computations and profiles. Computations include bearings and azimuths, latitudes and departures, and areas. Applies AutoCAD and land development software, plus "Total Station" survey equipment for traversing, radial stakeout, and layout of horizontal curves.

General Education Category:
Not GenEd

Course coordinator:
James Maccariella, 609-570-3462, maccarij@mccc.edu

Required texts & Other materials:

Elementary Surveying, 15th Edition
Ghilani and Wolf
Pearson
ISBN-13: 9780134604657

Course Student Learning Outcomes (SLO):

Upon successful completion of this course the student will be able to:

1. Balance angles for open and closed traverses. [Supports ILG 2; PLO 2]
2. Define and compute latitudes and departures for open and closed traverses. [Supports ILG 1, 2; PLO 2]
3. Compute coordinates, lengths and bearings of a traverse. [Supports ILG 2; PLO 2]
4. Define methods of adjusting a closure traverse. [Supports ILG 1, 2, 11; PLO 2]
5. Use the computer to analyze traversing problems. [Supports ILG 11; PLO 2]

Course-specific Institutional Learning Goals (ILG):

Institutional Learning Goal 1. Written and Oral Communication in English. Students will communicate effectively in both speech and writing.
Institutional Learning Goal 2. Mathematics. Students will use appropriate mathematical and statistical concepts and operations to interpret data and to solve problems.
Institutional Learning Goal 4. Technology. Students will use computer systems or other appropriate forms of technology to achieve educational and personal goals.
Institutional Learning Goal 11. Critical Thinking: Students will use critical thinking skills understand, analyze, or apply information or solve problems.

Program Learning Outcomes for Civil Engineering Technology Program (PLO)

1. Prepare designs for highways, buildings, and bridges.
2. Perform route/construction surveys using survey equipment and methods.
3. Test and analyze various construction materials.
4. Prepare design drawings.

Units of study in detail – Unit Student Learning Outcomes:

Unit I **Areas [Supports Course SLO #1, 2]**

Learning Objectives

The student will be able to:

- Compute areas by division into trianges, offsets from straight lines, double meridian method, and coordinates.
- Compute areas graphically using a planimeter and a digital computer.

Unit II **Vertical Curves [Supports Course SLO #2, 3]**

Learning Objectives

The student will be able to:

- Analyze vertical curves using the tangent-offset method.
- Compute vertical curve geometry.
- Compute the elevation and station of high or low points.
- Analyze vertical curves.

Unit III **Horizontal Curves [Supports Course SLO #1, 2, 3, 4, 5]**

Learning Objectives

The student will be able to:

- Define horizontal curve parameters.
- Layout simple and compound curves in the field.
- Analyze compound curves.

Unit IV **Field Procedures [Supports Course SLO #1, 2, 3, 4, 5]**

Learning Objectives

The student will be able to:

- Demonstrate use of digital and total station theodolites.
- Demonstrate use of CAD to prepare survey plans.

Evaluation of student learning:

Course student learning outcomes will be assessed by the following activities:

Lab	10%
Tests (3)	60%
Quizzes	10%
Final Exam	20%