Tompkins Cortland Community College

Master Course Syllabus

Course Discipline and Number CONT 202 **Year: 2024-2025**

Course Title: Surveying I **Credit Hours: 3**

I. Course Description: CONT 202 is the first of a sequence of two courses in plane surveying. It focuses on fundamental surveying theory and terrestrial–based survey measurements. Computations are made using an orthogonal 2D coordinate reference system and vertical datum. Use of traditional and modern surveying instruments is covered as well as computation methods using Coordinate Geometry (COGO) software. The emphasis of the course is primarily on construction and civil engineering applications. Instruction includes lectures and field use of traditional and modern instruments to perform measurements of distances, areas, angles, directions, elevations, and coordinates. Prerequisites: MATH 122; RDNG 116 if required by placement. 3 Cr. (2 Lec., 3 Lab.) Fall semesters.

II. Additional Course Information:

1. This is a required course for students in the Construction and Environmental Technology .A.A.S, ~~and~~ the Building Construction Certificate, and the Civil Engineering Technology track in the Applied Science and Technology A.A.S. It may also be of interest to extramural students working in construction and related industries.
2. For the Applied Science and Technology A.A.S., CONT 202 will satisfy a technical elective requirement.
3. Students must have access to a windows computer with at least 8G of memory and 2.50 GHz processor capacity to install the student version of the surveying software.
4. Fieldwork will be performed on campus each week.
5. This course requires a minimum of 2 hours of lecture and 3 hours of lab per week for a 15-week semester.

III. Student Learning Outcomes

Upon successful completion of this course, students will be able to:

1. Explain common terms and symbols employed in surveying.
2. Calculate accuracies for horizontal and vertical distance measurements.
3. Measure horizontal distances using a steel tape, plumb bob, and other accessories within a specified degree of accuracy, and to compute appropriate tape corrections.
4. Set up and use an automatic level and read a level rod to close a benchmark leveling circuit within a specified degree of accuracy; perform leveling survey.
5. Set up and use electronic theodolites and total stations to perform traverse survey computations including closure, corrections, coordinates, and area using COGO software.
6. Perform as-built construction survey using electronic distance measurement (EDM) to generate accurate floorplans.

IV. Tompkins Cortland Institutional Learning Outcomes; Program Learning Outcomes; SUNY General Education Outcomes

Tompkins Cortland ILOs N/A

Complete this section for "service" courses only (e.g. courses that are required of all students; courses that are not program specific but satisfy liberal arts requirements; or commonly used in multiple academic programs to meet non-program-specific requirements). Check only Institutional Learning Outcomes (ILOs) that are meaningfully developed and assessed in this course. For each ILO chosen, include the SLO to which it aligns.

Students will:

☐ Communicate effectively, in oral and written forms, taking into consideration audience and purpose.

☐ Apply principles and methods of scientific inquiry and quantitative reasoning appropriate to their discipline.

☐ Use information, critical thinking, and the creative process to solve problems and reach conclusions.

☐ Use technology appropriate to their discipline.

☐ Describe the ways in which social, economic, or environmental sustainability depends on their own and the collective contributions of a diversity of ideas and people.

Program Learning Outcomes

Complete this section for program-specific courses (e.g. those that share the same 4 letter designation as the academic program or satisfy requirements in related programs). List the academic program(s) here and note which Student Learning Outcomes align to specific Programmatic Learning Outcomes. Please see the MCS Instructions for more details.

Specify the Academic Program
Construction and Environmental Technology A.A.S.

List the PLO or PLOs that are meaningfully developed and assessed in this course. For Each PLO, list the specific course SLO through which the development and assessment will occur.

PLO 1: Graduates will have the educational background and ability to learn new, job-specific skills

SLOs:

1. Explain common terms and symbols employed in surveying.
2. Calculate accuracies for horizontal and vertical distance measurements.
3. Measure horizontal distances using a steel tape, plumb bob, and other accessories within a specified degree of accuracy, and to compute appropriate tape corrections.
4. Set up and use an automatic level and read a level rod to close a benchmark leveling circuit within a specified degree of accuracy; perform leveling survey.
5. Set up and use electronic theodolites and total stations to perform traverse survey computations including closure, corrections, coordinates, and area using COGO software.
6. Perform as-built construction survey using electronic distance measurement (EDM) to generate accurate floorplans.

SUNY General Education Outcomes N/A

If this course **assesses** a SUNY GEN ED Outcome, check all that apply and indicate which course outcome(s) address each checked item:

☐ CRITICAL THINKING - Students will:

a. identify, analyze, and evaluate arguments as they occur in their own or others' work; and
b. develop well-reasoned arguments.

☐ INFORMATION MANAGEMENT - Students will:

a. perform the basic operations of personal computer use;
b. understand and use basic research techniques; and
c. locate, evaluate and synthesize information from a variety of sources.

☐ GENERAL EDUCATION CATEGORY - Area(s):
For courses that are approved to meet one (or more) of the ten SUNY General Education categories, indicate which category the course fulfills, and which outcome(s) are aligned with the SUNY outcomes for that category:

☐ This course does not address any of the above Tompkins Cortland ILOs, PLOs, or SUNY General Education Outcomes.

V. Essential Topics/Themes

1. Measurements: Errors and Mistakes, Accuracy, and Precision
2. Horizontal Distances: Pacing, Taping, and Electronic Distance Measurement (EDM)
3. Vertical Distances: Differential Leveling, Profiles and Cross Sections, Total Stations
4. Angles and Directions: Bearings, Azimuths, Declinations, Electronic Theodolites, and Total Stations, COGO Software
5. As-built Construction Surveying: Floor Plans, EDM
6. Horizontal Control: Traverse Surveys Computations (Manually and with COGO Software)
7. Introduction to Earth Movement: Contours, Grading, COGO Software

VI. Methods of Assessment/Evaluation

Method	**% Course Grade**
1. Unit Exams and Quizzes	20-40%
2. Field Work / Labs	30-50%
3. Final Exam	30-40%

VII. Texts – ☒ Required ☐ Recommended ☒ Used for more than one course

CONT 202 *Surveying I* and CONT 203 *Surveying II*

1. *Surveying with Construction Application.* Kavanagh, Barry F. and Dianne K. Slattery. 8th Ed. © 2015. Pearson.

Editions listed are current as of date of syllabus. More recent editions may be used.

VIII. Bibliography of Supplemental Materials

1. *Surveying Fundamentals and Practices*. Nathanson, Lanzafama and Kissam. 7th Ed. © 2018. Pearson. ISBN-13: 9780134414430

Editions listed are current as of date of syllabus. More recent editions may be used.

IX. Other Learning Resources

Audiovisual: No resources specified
Electronic: AutoCAD Civil 3D https://www.autodesk.com/
Other: No resources specified

Attendance Policy: *To maintain good grades, regular attendance in class is necessary. Absence from class is considered a serious matter and absence never excuses a student from class work. It is the responsibility of all instructors to distribute reasonable attendance policies in writing during the first week of class. Students are required to comply with the attendance policy set by each of their instructors. Students are not penalized if they are unable to attend classes or participate in exams on particular days because of religious beliefs, in accordance with Chapter 161, Section 224-a of the Education Law of the State of New York. Students who plan to be absent from classroom activity for religious reasons should discuss the absence in advance with their instructors. See college catalog for more information.*

Services for Students with Disabilities: *It is the College's policy to provide, on an individual basis, appropriate academic adjustments for students with disabilities, which may affect their ability to fully participate in program or course activities or to meet course requirements. Students with disabilities should contact the Coordinator of Access and Equity Services, to discuss their particular need for academic adjustments. All course materials are available in alternate formats upon request.*

Academic Integrity: *Every student at Tompkins Cortland Community College is expected to act in an academically honest fashion in all aspects of his or her academic work: in writing papers and reports, in taking examinations, in performing laboratory experiments and reporting the results, in clinical and cooperative learning experiences, and in attending to paperwork such as registration forms.*
Any written work submitted by a student must be his or her own. If the student uses the words or ideas of someone else, he or she must cite the source by such means as a footnote. Our guiding principle is that any honest evaluation of a student's performance must be based on that student's work. Any action taken by a student that would result in misrepresentation of someone else's work or actions as the student's own — such as cheating on a test, submitting for credit a paper written by another person, or forging an advisor's signature — is intellectually dishonest and deserving of censure.
Several degree programs offer student learning opportunities (such as internships, field work, and clinical experiences) outside the standard classroom setting. As part of the learning process, students must understand and engage in conduct that adheres to principles guiding employment within the professional workplace. These behaviors include, but are not limited to, academic integrity, accountability, reliability, respect, use of appropriate language and dress, civility, professional ethics, honesty, and trustworthiness. Disciplinary action may be initiated for inappropriate conduct occurring while participating in any course-related project or event.