



COURSE OUTLINE: SUR201 - SURVEYING

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Approved: Martha Irwin - Dean

Course Code: Title	SUR201: SURVEYING
Program Number: Name	4080: CIVIL ENG TECHNICIAN
Department:	CIVIL/CONSTRUCTION
Academic Year:	2025-2026
Course Description:	<p>Surveying plays a key role with our built environment. As a civil technician you may have responsibilities at the initial planning, layout or construction phases of a project.</p> <p>This course integrates the operations of a total station, GPS, and drone technology to computer software for the purpose of map creation, terrain modeling and project data management. The field work deals with topographic surveys and practical construction layout projects.</p> <p>This course is a continuation of SUR101.</p>
Total Credits:	4
Hours/Week:	4
Total Hours:	56
Prerequisites:	SUR101
Corequisites:	There are no co-requisites for this course.
Vocational Learning Outcomes (VLO's) addressed in this course:	<p>4080 - CIVIL ENG TECHNICIAN</p> <p>VLO 1 develop and use strategies to enhance professional growth and ongoing learning in the civil engineering field.</p> <p>VLO 2 comply with workplace health and safety practices and procedures in accordance with current legislation and regulations.</p> <p>VLO 4 carry out sustainable practices in accordance with contract documents, industry standards and environmental legislative requirements.</p> <p>VLO 6 collect, process and interpret technical data to produce written and graphical project-related documents.</p> <p>VLO 7 use industry-specific electronic and digital technologies to support civil engineering projects.</p> <p>VLO 8 participate in the design and modeling phase of civil engineering projects by applying engineering concepts, basic technical mathematics and principles of science to the review and production of project plans.</p> <p>VLO 11 apply teamwork, leadership and interpersonal skills when working individually or within multidisciplinary teams to complete civil engineering projects.</p>
Essential Employability Skills (EES) addressed in this course:	<p>EES 1 Communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience.</p> <p>EES 2 Respond to written, spoken, or visual messages in a manner that ensures effective</p>



	<p>communication.</p> <p>EES 3 Execute mathematical operations accurately.</p> <p>EES 4 Apply a systematic approach to solve problems.</p> <p>EES 5 Use a variety of thinking skills to anticipate and solve problems.</p> <p>EES 6 Locate, select, organize, and document information using appropriate technology and information systems.</p> <p>EES 7 Analyze, evaluate, and apply relevant information from a variety of sources.</p> <p>EES 8 Show respect for the diverse opinions, values, belief systems, and contributions of others.</p> <p>EES 9 Interact with others in groups or teams that contribute to effective working relationships and the achievement of goals.</p> <p>EES 10 Manage the use of time and other resources to complete projects.</p> <p>EES 11 Take responsibility for ones own actions, decisions, and consequences.</p>
Course Evaluation:	<p>Passing Grade: 50%, D</p> <p>A minimum program GPA of 2.0 or higher where program specific standards exist is required for graduation.</p>
Other Course Evaluation & Assessment Requirements:	<p>Grade Definition Grade Point Equivalent</p> <p>A+ 90 - 100% 4.00</p> <p>A 80 - 89%</p> <p>B 70 - 79% 3.00</p> <p>C 60 - 69% 2.00</p> <p>D 50 - 59% 1.00</p> <p>F (Fail)49% and below 0.00</p> <p>CR (Credit) Credit for diploma requirements has been awarded.</p> <p>S Satisfactory achievement in field /clinical placement or non-graded subject area.</p> <p>U Unsatisfactory achievement in field/clinical placement or non-graded subject area.</p> <p>X A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course.</p> <p>NR Grade not reported to Registrar`s office.</p> <p>W Student has withdrawn from the course without academic penalty.</p> <p>Attendance Students are only allowed to miss three classes without documented explanation. One mark will be deducted from your overall grade for each undocumented explanation. The maximum deduction in overall grade is not to exceed 15%. Valid documented explanation include:</p> <ul style="list-style-type: none"> -Medical reason -Family emergency -Child care issue -Transportation problem <p>The documented explanation has to be sent to me by e-mail no later than three days from the missed class. A doctor note, etc., is to be attached as a PDF file to your e-mail.</p>
Books and Required Resources:	<p>CSA Safety Boots</p> <p>CSA reflective vest (Surveyor`s vest recommended)</p>

Surveying bag (Backpack Recommended)
 Two (2) cans of inverted orange line paint
 One (1) roll of survey ribbon
 Twenty (20) 12 steel spikes
 Tape measure
 Mini sledge hammer

Course Outcomes and Learning Objectives:

Course Outcome 1	Learning Objectives for Course Outcome 1
Upon successful completion, the student will be able to: 1. Comply with health and safety practices and procedures while performing field activities.	1.1 Conduct self in safe manner and in accordance with the requirements of work situation 1.2 Identify unsafe situations in the field 1.3 Apply best safety practices when working outdoors
Course Outcome 2	Learning Objectives for Course Outcome 2
Upon successful completion, the student will be able to: 2. Collect, process and interpret survey data to produce a neat well organized paper-based and electronic field book.	2.1 collect, interpret and check survey data by using systematic approaches in accordance with recognized standards and practices 2.2 Maintain field book in a professional standard with accurate, legible, and complete documentation suitable for external review. 2.3 use appropriate data recorder to produce the electronic field book 2.4 contribute to the development of strategies to collect the survey field data 2.5 select and operate a digital level, total station and GPS to measure and record survey data that is within expected parameters of precision and accuracy 2.6 collect and organize survey field information in an electronic retrievable manner according to approved techniques 2.7 use collected and stored field data accurately and effectively in producing a topographic plan 2.8 ensure that at the end of each field survey session the data is shared with group members
Course Outcome 3	Learning Objectives for Course Outcome 3
Upon successful completion, the student will be able to: 3. Use industry-specific digital level, total stations, GPS, drone, and other	3.1 Select and use standard survey equipment such as digital level, total station and global positioning systems 3.2 Apply survey techniques and use survey equipment such as digital level, total station and GPS 3.3 Use Civil3D to set up the survey, import field books, export data, create a surface and produce plans for the topographic



	digital technologies to support the topographic survey project.	survey 3.4 Visualize and edit surfaces for the topographic survey using Civil3D 3.5 Identify and demonstrate the connection interface between the data collector and the total station and the GPS unit 3.6 Complete basic drone certification. 3.7 Utilize a micro-drone for the development of site orthomosaic and topo data. 3.8 Ability to process and interpret data in Pix4D.
	Course Outcome 4	Learning Objectives for Course Outcome 4
	Upon successful completion, the student will be able to: 4. Participate as a member of a survey team by applying surveying concepts and basic technical mathematics to produce a topographic survey plan.	4.1 Collect, interpret and check survey data by using systematic approaches in accordance to recognized standards and practices 4.2 Perform a differential leveling activity to establish elevations for control points 4.3 Perform total station activities to define topographic tree, catch basin, fire hydrant points, building polygons, road/sidewalk lines and ground shot 4.4 Perform GPS activities to collect topographic data for 4.5 Illustrate and layout grade stakes for a go kart track 4.6 implement checks to ensure that survey field work is accurate 4.7 Interpret issues found during checking the survey work and provide recommendations to solve matters 4.7 Perform an interlining activity to lay out a reference line for a proposed extension of a building 4.8 Implement checks to ensure that field work is accurate 4.9 Seek assistance to resolve situations that are beyond the student's scope of knowledge. 4.10 Describe the basis of coordinate geometry and apply it surveying problems 4.11 Determine layout points from construction drawings and stake key geometric features including corners, curves, and edges. 4.12 Set grades in the field using appropriate elevation references for structures, paving, and drainage features.
	Course Outcome 5	Learning Objectives for Course Outcome 5
	Upon successful completion, the student will be able to: 5. Apply teamwork, leadership and interpersonal skills when working individually or within a team to complete the survey field camp projects.	5.1 Take initiative while working with your team to complete the field projects 5.2 Assume accountability for self in managing the use of time and resources to meet established deadline 5.3 Work as an effective team player to complete the survey projects while promoting a positive work environment 5.4 Use effective time-management and organizational techniques to prioritize project tasks and to accomplish goals set by the team

5.5 Use conflict resolution skills in the field including cooperation and compromise
5.6 Deliver concise field presentations summarizing procedures, findings, and issues.

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Assignments and Activities	60%
Final Exam	20%
Midterm Exam	20%

Date:

July 31, 2025

Addendum:

Please refer to the course outline addendum on the Learning Management System for further information.

