GBC Class/Course Assessment Report

Course Prefix, Number, and Title: SUR 450 Construction Surveying
Section Number(s): 1001
Department: Computer Technologies

Instructor: Byron Calkins
Academic Year: 2019-2020
Semester: Spring 2020
Is this a GenEd class? Yes___ No_x__

Complete and submit your assessment report electronically to your department chair. As needed, please attach supporting documents and/or a narrative description of the assessment activities. You may use as many or as few outcomes as necessary.

Class/Course Outcomes	Assessment Measures	Assessment Results	Outcome Results Analysis
In the boxes below, summarize the outcomes assessed in your class or course during the last year. *Note: If this is a GenEd class, include the appropriate GenEd objectives at the beginning of the course assessment report.*	In the boxes below, summarize the methods used to assess course outcomes during the last year. Assessment of outcomes need to be based on student work that directly demonstrates achievement of outcomes. Also include the criterion to judge whether or not students have achieved the expected outcome. *Note: Any assessment reporting for GenEd courses should provide a clear explanation of the assessment methodology (how performance was assessed) as well as how the work being assessed meets Gen. Ed. outcomes.*	In the boxes below, summarize the results of your assessment activities during the last year. Notes: *For GenEd courses, in the boxes below, summarize the results of your assessment activities during the last year.*	In the boxes below, please reflect on this outcome's results and summarize how you plan to use the results to improve student learning. *Note: Completed assessment reporting for GenEd courses should include data generated from assessment as well as discussion and interpretation of its meaning and should include detail on how the instructor/department will incorporate and utilize data in course design and planning moving forward.*

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Course Outcome #1:	**Course Assessment Measure**	**Course Results**	**Course Analysis**
Determine stationing, offset staking, and slope staking for construction site control	Assessment Overview: *HW 4 CircularC and COGO Calcs* Pi (B) is a constant that is part of the geometry of the circular curve. It defines the circumference and area of a circle. The amazing property of Pi is that its value never changes even though there is an infinite number of individual circular curves. Assessment Methodology: *HW 4 CircularC and COGO Calcs* HW 4 CircularC and COGO Calcs is evaluated using a rubric that measures the learner's ability to compute coordinates, deflection angles, and chord distances to layout a 200.00' diameter water tank foundation at half stations and create a layout table and compute the angle right and distance necessary for the check. Criterion for achievement: *HW 4 CircularC and COGO Calcs* 70% of students will score above 80% on Course Outcome #1 in HW 4 CircularC and COGO Calcs.	Results: *HW 4 CircularC and COGO Calcs* 11/12 students scored 80% or higher on HW 4 CircularC and COGO Calcs Criterion Met: *Yes/No* Yes	Analysis: The criterion for achievement developed for the HW 4 CircularC and COGO Calcs states that 70% of the students will score 80% or greater on HW 4 CircularC and COGO Calcs to meet course outcome number one, which requires the learner to determine stationing, offset staking, and slope staking for construction site control. The criterion for course outcome one was met, as 92% of the learners in the SUR 450 class earned an 80% or greater on HW 4 CircularC and COGO Calcs. Action Plan: Please see course overview report and notes for discussion, interpretation, and how the instructor/department will incorporate proficiency data results from the course outcome number one: determine stationing, offset staking, and slope staking for construction site control.
Course Outcome #2:	**Course Assessment Measure**	**Course Results**	**Course Analysis**
Calculate and layout highway super-elevations	Assessment Overview: *HW 5 SpiralC Part I* Spirals that are placed in curve systems to provide the transition from tangent to circular curve and the transition from circular curve to tangent.. Assessment Methodology: *HW 5 SpiralC Part I*	Results: *HW 5 SpiralC Part I* 11/12 students scored 80% or higher on HW 3 Calculations on the Tilted Photograph. Criterion Met: *Yes/No* Yes	Analysis: The criterion for achievement developed for the HW 5 SpiralC Part I states that 70% of the students will score 80% or greater on HW 5 SpiralC Part I to meet course outcome number two, which requires the learner to calculate and layout highway super-elevations. The criterion for course outcome two was met, as 92% of the learners in the SUR 450 class earned an 80% or greater on

	HW 5 SpiralC Part I is evaluated using a rubric that measures the learner's ability to compute the value of "a" and the given value of the Ls using Table V to determine the following spiral curve system elements: ΔS, p, q, X, Y, LC, LT, and ST. Determine the stations for the SC, CS, and ST. Given that the azimuth of the main tangent from the TS Station to the PI Station is 68°30'32". Draw a sketch to scale and label each of these elements. Station the curve at the half station from the TS to the ST Station. Compute the deflection angles necessary to layout the spiral from the TS to the SC Station. Compute the chord from the TS to Stations 22+00.00 and 24+50.00. Compute the coordinates of the PI and ST Stations along the main tangents of the system and compute the coordinates of the SC, CS, and ST Stations along the tangents of the entering spiral, the circular curve, and exit spiral. Criterion for achievement: *HW 5 SpiralC Part I* 70% of students will score above 80% on Course Outcome #2 in HW 5 SpiralC Part I.		HW 5 SpiralC Part I. Action Plan: Please see course overview report and notes for discussion, interpretation, and how the instructor/department will incorporate proficiency data results from the course outcome number two: calculate and layout highway super-elevations.
Course Outcome #3: Compute earthwork and other surveying related volumes	**Course Assessment Measure** Assessment Overview: *HW 11 CrossS Volumes* One of the costly items in the development of land or the construction of roadways is earthwork. It costs money to move earth and rock. On a sliding scale, the cheapest situation is natural terrain with flat grades where very little earth needs to be moved; the next best is a situation where the cuts are made right next to where the fill is required; the costs start mounting where the cuts are not anywhere near where the fill is required and it is cheaper to haul the fill from borrow pits and take the cut to waste. It is necessary to	**Course Results** Results: *HW 11 CrossS Volumes* 7/12 students scored 80% or higher on HW 11 CrossS Volumes. Criterion Met: *Yes/No* No	**Course Analysis** Analysis: The criterion for achievement developed for HW 11 CrossS Volumes states that 70% of the students will score 80% or greater on HW 11 CrossS Volumes to meet course outcome number three, which requires the learner to compute earthwork and other surveying related volumes. The criterion for course outcome three was not met, as 58% of the learners in the

	determine cuts and fills on a route survey. This is done with the measurement of cross sections. These measurements can be used to compute cross sections areas and volumes. Then a mass haul diagram can be used to determine the balance, or lack thereof, of cuts and fills. Assessment Methodology: *HW 11 CrossS Volumes* HW 11 CrossS Volumes is evaluated using a rubric that measures the learner's ability to compute the volume by the Method of Average End Areas ignoring the cross-section at station 30+50, compute the volume by the Prismoidal Formula using the cross-section at station 30+50, correct the volume computed by Method of Average End Areas by applying the Prismoidal Correction and compare the corrected volume with the volume gained by the Prismoidal Formula. Criterion for achievement: *HW 11 CrossS Volumes* 70% of students will score above 80% on Course Outcome #3 for HW 11 CrossS Volumes.		SUR 450 class earned an 80% or greater on HW 11 CrossS Volumes. Action Plan: Please see course overview report and notes for discussion, interpretation, and how the instructor/department will incorporate proficiency data results from course outcome number three (compute earthwork and other surveying related volumes) in course design and planning moving forward.

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Course Overview Report

SUR 450 (Construction Surveying) course outcomes are measurable and consistent with the course-level objectives. The module/unit-level learning objectives describe outcomes that are measurable and consistent with the course-level objectives. Learning objectives are stated clearly in the syllabus, are written from the learner's perspective, but are not prominently located in each module/unit overview. The relationship between learning objectives and learning activities is not stated in each module/unit overview. The learning objectives are suited to the level of the course as 60% of all learners earned an 80% or greater overall, and 90% earned a 70% or greater overall.

SUR 450 (Construction Surveying) course assessments (HW 4 Determine stationing, offset staking, and slope staking for construction site control, HW 5 Calculate and layout highway super-elevations, and HW 11 Compute earthwork and other surveying related volumes) measure the achievement of the stated learning outcomes. The course grading policy is stated clearly at the beginning of the course in the course syllabus and specific and descriptive criteria are provided for the evaluation of learners' work, and their connection to the course grading policy is clearly explained. The SUR 450 (Construction Surveying) assessments used are sequenced, varied, and suited to the level of the course. The course provides learners with multiple opportunities to track their learning progress with a timely feedback policy, automated quiz grading, online class meetings, and instructor comments.

SUR 450 (Construction Surveying) instructional materials contribute to the achievement of the stated learning objectives. The relationship between the use of instructional materials in the course and completing learning activities is not clearly explained in the module overview or on the assessment activity page. The course does not model the academic integrity expected of learners by providing both source references and permissions for use of instructional materials, except in the syllabus. The instructional materials are comprised of dated and current versions, and mostly represent up-to-date theory and practice in the discipline. A variety of instructional materials (Textbook, Video, Big Blue Button, Industry Publications) are used in the course

Notes: How will the instructor/department incorporate proficiency data results from the general education technological proficiency outcomes and course outcomes in course design and planning moving forward.

Course Outcome #1:

Determine stationing, offset staking, and slope staking for construction site control

Action Plan: HW 4 CircularC and COGO Calcs

The criterion for course outcome one was met, as 92% of the learners in the SUR 450 class earned an 80% or greater on HW 4 CircularC and COGO Calcs. Course level objectives such as, using a calculator to compute the horizontal angle right and distance to layout a point from two known control stations, compute and run grades are assessed via learning activities from our class text, *Elithorp Jr., James A. Construction Surveying with COGO Applications, Copley Custom Textbooks, 2007* and supplementary readings. There are no current action items for course outcome one.

Course Outcome #2:

Calculate and layout highway super-elevations

Action Plan: HW 5 SpiralC Part I

The criterion for course outcome two was met, as 92% of the learners in the SUR 450 class earned an 80% or greater on HW 5 SpiralC Part I. Course level objectives such as computing layout tables for circular curves and spiral curves, compute elevations at each station of vertical curves, apply the geometry of the circular, spiral, and vertical curve are assessed via learning activities from our class text, *Elithorp Jr., James A. Construction Surveying with COGO Applications, Copley Custom Textbooks, 2007* and supplementary readings. There are no current action items for course outcome two.

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Course Outcome #3:
Compute earthwork and other surveying related volumes

Action Plan: HW 11 CrossS Volumes
The criterion for course outcome three was not met, as 58% of the learners in the SUR 450 class earned an 80% or greater on HW 11 CrossS Volumes. The course level objectives such as calculating cross sections area and earthwork volumes are assessed via learning activities from our class text, *Elithorp Jr., James A. Construction Surveying with COGO Applications, Copley Custom Textbooks, 2007* and supplementary readings. Methods and strategies that will be employed to increase student success and concept integration is to add a CADD assignment, input the coordinates, and produce a result. This will allow the learner to compare their hand written results to the software solution. If the results vary, a different algorithm must be employed to resolve CADD vs. student solution.

I have reviewed this report:

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Department Chair

Date_____

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Dean

Date_____

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Vice President of Academic Affairs and Student Services

Date_____