Assessment: Course Four Column

Courses (CT) - Surveying

SUR 340:Photogrammetry/Remote Sensing

Course Outcomes	*Assessment Measures*	*Results*	*Actions*
Derive elevation data from single and stereo photos - Derive elevation data from single and stereo photos **Course Outcome Status:** Active **Next Assessment:** 2023-2024	Assessment Overview: HW 2 Relief Displacement and Ground Coordinates According to John A. Howard of Aerial Photo-Ecology, precise measurements of height can be made on the photographs using either single or stereo-pairs. For example, knowing a hilltop lies at an elevation of x feet above sea level, and the image of the hilltop is x inches from the principal point of the photograph; we can compute the relief displacement of a hilltop using the datum scale of a vertical photograph taken with a lens having a known focal length. Assessment Methodology: HW 2 Relief Displacement and Ground Coordinates HW 2 Relief Displacement and Ground Coordinates is evaluated using a rubric that measures the learner's ability to compute the height tower on a photo, compute the relief displacement of the hilltop, determine the height of a telephone utility box imaged in the corner of a 9-inch square photograph, and	**Reporting Period:** 2018-2019 **Criterion Met:** Yes Results: HW 2 Relief Displacement and Ground Coordinates 9/10 students scored 80% or higher on HW 2 Relief Displacement and Ground Coordinates. Analysis: The criterion for achievement developed for the SUR HW 2 Relief Displacement and Ground Coordinates states that 70% of the students will score 80% or greater on HW 2 Relief Displacement and Ground Coordinates to meet course outcome number one, which requires the learner to derive elevation data from single and stereo photos. The criterion for course outcome one wasmet, as 90% of the learners in the SUR 340 class earned an 80% or greater on HW 2 Relief Displacement and round Coordinates. (08/28/2019)	**Action:** 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, (which requires the learner to derive elevation data from single and stereo photos) in course design and planning moving forward. (08/28/2019) **Follow-Up:** Derive elevation data from single and stereo photos Action Plan: HW 2 Relief Displacement and Ground Coordinates The criterion for course outcome one was met, as 90% of the learners in the SUR 340 class earned an 80% or greater on HW 2 Relief Displacement and Ground Coordinates. Course level objectives such as, Identify the effect of varying ground elevations and tilt on the single photograph, compute the scale of a photograph are assessed via learning activities

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	compute the flying height above sea level. **Criterion:** HW 2 Relief Displacement and Ground Coordinates 70% of students will score above 80% on Course Outcome #1 in HW 2 Relief Displacement and Ground Coordinates.		from our class text, (Remote Sensing and Image Interpretation, 2015, authored by Lillesand, Thomas M., Kiefer, Ralph W., and Chipman, Jonathan W.) and supplementary readings. There are no current action items for course outcome one, other than adopting the most current edition of the text, when it becomes available. (08/28/2019)
Aerial photo and satellite image measurements and analysis - Perform aerial photo and satellite image measurements and analysis **Course Outcome Status:** Active **Next Assessment:** 2023-2024	**Assignment - Project -** HW 3 Calculations on the Tilted Photograph On a tilted photograph, we can compute the area of a triangular tract of land using image coordinates with respect to the fiducial axes if the tilt and swing angles of the photograph, camera focal length, and flying height above sea level is giving. Assessment Methodology: HW 3 Calculations on the Tilted Photograph HW 3 Calculations on the Tilted Photograph is measured by the learner's ability to compute adjusted image coordinates, compute the scale of the photograph at a determined point, compute the ground lengths of points, draw a sketch showing the area of points, and computing the horizontal angle from points. **Criterion:** HW 3 Calculations on the Tilted Photograph 70% of students will score above 80% on Course Outcome #2 in HW 3 Calculations on the Tilted Photograph.	**Reporting Period:** 2018-2019 **Criterion Met:** No Results HW 3 Calculations on the Tilted Photograph 5/10 students scored 80% or higher on HW 3 Calculations on the Tilted Photograph. Analysis: The criterion for achievement developed for the HW 3 Calculations on the Tilted Photograph states that 70% of the students will score 80% or greater on HW 3 Calculations on the Tilted Photograph to meet course outcome number two, which requires the learner to perform aerial photo and satellite image measurements and analysis. The criterion for course outcome two was not met, as 50% of the learners in the SUR 340 class earned an 80% or greater on HW 3 Calculations on the Tilted Photograph. (08/28/2019)	**Action:** 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, (which requires the learner to perform aerial photo and satellite image measurements and analysis) in course design and planning moving forward. (08/28/2019) **Follow-Up:** Perform aerial photo and satellite image measurements and analysis Action Plan: HW 3 Calculations on the Tilted Photograph The criterion for course outcome two was not met, as 50% of the learners in the SUR 340 class earned an 80% or greater on HW 3 Calculations on the Tilted Photograph. Course level objectives such as, compute the effect of relief displacement on images in a single photograph, define the differences in the geometry of a vertical photograph and the tilted

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			photograph, and define the four orientations in photogrammetry are assessed via learning activities from our class text, (Remote Sensing and Image Interpretation, 2015, authored by Lillesand, Thomas M., Kiefer, Ralph W., and Chipman, Jonathan W.) and supplementary readings. There are action items for course outcome two, in addition to adopting the most current edition of the text, (when it becomes available) I would consider chunking this rather long assessment up into two separate assignments. Currently, the students have two weeks to finish HW 3 due to its rigor. If I present the first half in week one and second half in week two, the student will not procrastinate, and the success rate for this outcome should improve. (08/28/2019)
Plan survey ground control for stereo photo projects - Plan survey ground control for stereo photo projects **Course Outcome Status:** Active **Next Assessment:** 2023-2024	Assessment Overview: Small Unmanned Aircraft Systems (sUAS) Project The Small Unmanned Aircraft Systems (sUAS) Project, requires the student to demonstrate the ability to operate a sUAS under FAA regulations and examine the regulations, airspace requirements, weather, loading and performance, and operations of Small Unmanned Aircraft Systems. Assessment Methodology: Small Unmanned Aircraft Systems (sUAS) Project After reading Remote Pilot – Small Unmanned Aircraft Systems Study	**Reporting Period:** 2018-2019 **Criterion Met:** Yes Results Small Unmanned Aircraft Systems (sUAS) Project 8/10 students scored 80% or higher on the Small Unmanned Aircraft Systems (sUAS) Project. Analysis: The criterion for achievement developed for the Small Unmanned Aircraft Systems (sUAS) Project states that 70% of the students will score 80% or greater on Small Unmanned Aircraft Systems (sUAS) Project to meet course outcome number three, which requires the learner to plan survey ground control for stereo photo projects. The criterion for course outcome three was met, as 80% of the learners in	**Action:** 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 three, (which requires the learner to plan survey ground control for stereo photo projects) in course design and planning moving forward. (08/28/2019) **Follow-Up:** Course Overview Report SUR 340 (Photogrammetry and Remote Sensing) course outcomes are measurable and

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	Guide and referencing the Airman Knowledge Testing Supplement for Sport Pilot, Recreational Pilot, and Private Pilot, the student will be able to recall and interpret FAA regulations. **Criterion:** Small Unmanned Aircraft Systems (sUAS) Project 70% of students will score above 80% on Course Outcome #3 for "The Small Unmanned Aircraft Systems (sUAS) Project."	the SUR 340 class earned an 80% or greater on the Small Unmanned Aircraft Systems (sUAS) Project. (08/28/2019)	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 340 (Photogrammetry and Remote Sensing) course assessments (HW 2 Relief Displacement and Ground Coordinates, HW 3 Calculations on the Tilted Photograph, Small Unmanned Aircraft Systems (sUAS) Project) 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 340 (Photogrammetry and Remote Sensing) assessments used are sequenced, varied, and suited to

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			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 340 (Photogrammetry and Remote Sensing) 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.

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			(08/28/2019) **Follow-Up:** Plan survey ground control for stereo photo projects Action Plan: Small Unmanned Aircraft Systems (sUAS) Project The criterion for course outcome three was met, as 80% of the learners in the SUR 340 class earned an 80% or greater on the Small Unmanned Aircraft Systems (sUAS) Project. The course level objectives such as, explain the difference between accuracy of classification of remote sensing data and accuracy of survey measurement, explain the differences between rectification and differential rectification, apply the principles of scanning resolution, image pixel size, ground pixel size, and data file size to computational problems involving digital photogrammetry, define the basic differences in image geometry between remote sensing systems and the frame camera are intended to introduce material related to a method, idea, concept, or an example of how one thinks in a given field. Topics from the project are also intended to motivate students to explore further. When students engage actively with class material and with their peers, a learning community is formed where thoughts and ideas are shared, and knowledge is gained. Methods and strategies that will be employed to increase student

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			success and concept integration, is to add flight data and software design into the Small Unmanned Aircraft Systems (sUAS) Project by utilizing the new UAV and imaging software our LSG lab purchased in Spring 2019. (08/28/2019)