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Course Description:
FORS 5175 UAS Applications in Forest Management. 3 semester hours. Use an unmanned aerial system (UAS) to survey a recently logged forestland for forest management purposes. This is an independent study course that the student will develop the experiment design, execute the plan, analyze the data, and present the results. The goal is to assess the feasibility of using drone captured imagery to estimate stump area on a recently logged forestland.

Course Objectives:
Geographic Information System (GIS) is a computer system for the management, analysis, and display of geographic information. GIS includes a set of comprehensive tools for working with geographic data. With the advancement in unmanned aerial system (UAS), aerial imagery can be captured by flying a drone. It resulted in spatial data acquisition at a much higher spatial and temporal resolution than traditional satellite or airborne remote sensing. In this course, the student will be applying UAS technology and image processing algorithms to assess the feasibility of estimating forest measurements remotely from a drone acquired GIS database.

Program Learning Outcomes:
GIS has become commonplace in a multitude of disciplines. This class applies geospatial technologies for data creation and interpretation. Issues of data acquisition and the use of GIS for real-world applications are emphasized.

The course is designed to address the Program Learning Outcomes in understanding the competency of ecology, biology, policy, economics, and administration of forestry and environmental science at advanced level, as well as understanding the competency of resource measurement, management and oral and written communication skills at advanced level.

Student Learning Outcomes:
Students will demonstrate competency in the fundamentals of GIS in natural resource management. They will learn not only the most common GIS software but also the necessary background to understand how the software package works. As the semester develops, students will understand concepts and principles of GIS, apply spatial analytical tools to address questions and solve problems in natural resources. They will
also understand professional ethics and demonstrate competency in oral and written communication skills through project preparation and presentation.

**Textbook:**
- **Recommended:**

**Software:**
- Esri ArcGIS Desktop, ArcGIS Pro, and ArcGIS Online.

**Course Outlines:**
- Experimental design
- UAS calibration
- Flight missions
- Ground measurements
- Image processing
- Accuracy assessment
- Report development

**Grading Policy:**
- Project proposal (20%)
- Data analysis (20%)
- Project report (30%)
- Poster presentation (15%)
- Oral presentation (15%)

**COVID-19 MASK POLICY**
Masks (cloth face coverings) must be worn over the nose and mouth at all times in this class and appropriate physical distancing must be observed when meeting face to face. Students not wearing a mask and/or not observing appropriate physical distancing will be asked to leave the class. All incidents of not wearing a mask and/or not observing appropriate physical distancing will be reported to the Office of Student Rights and Responsibilities. Students who are reported for multiple infractions of not wearing a mask and/or not observing appropriate physical distancing may be subject to disciplinary actions.


In order to maintain social distancing, the lectures and labs will be also made available online and recorded so that the students have different options.