Course Outline for NAVI 202

DRONE AERIAL SURVEY, PHOTOGRAPHY AND VIDEOGRAPHY

Effective: Fall 2022

I. CATALOG DESCRIPTION:
NAVI 202 — Noncredit

This course is an introduction to using drones and Unoccupied Aerial Systems (UAVs) to capture and process a wide array of remote sensing data and digital imagery. It will cover pre-flight planning, in-flight choreography, and post processing stages. An emphasis is developing post-processing skills for commercial applications with exposure to the craft of report writing, cartography, and desktop stills/video editing. This is a creative starting point to using drones in multiple disciplines and careers.

Strongly Recommended
NAVI 201 - Orientation to Drones and Unoccupied Aerial Systems (UAVs)
or
GEOG 15 - Introduction to GIS
or
PHTO 56 - Introduction to Digital Photography
or
PHTO 58 - Introduction to Videography
or

Grading Methods:
Pass/No Pass

Discipline:
   • Aviation

Noncredit Category
J - Workforce Preparation

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<td>Total Noncredit Hours:</td>
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II. PREREQUISITE AND/OR ADVISORY SKILLS:

Before entering this course, it is strongly recommended that the student should be able to:

A. NAVI/201
   1. Evaluate the legal (local, state, and federal) and ethical frameworks in order to safely operate common Unoccupied Aerial Systems (UAS), more commonly referred to as drones.
   2. Describe the varied uses of an Unoccupied Aerial System (UAS) in multiple disciplines and careers.

B. GEOG 15
   1. Define Geographic Information Systems (GIS)
   2. Identify and evaluate GIS data sources and the importance of metadata.
   3. Identify, compare and contrast vector and raster GIS.
   4. Evaluate the capabilities of various GIS software programs
   5. Apply cartographic principles of scale, resolution, projection and data management to a problem of a geographic nature
   6. Apply spatial analysis functions on a GIS to solve a Geospatial problem

C. PHTO 56
   1. Capture digital photographic image and make simple imaging corrections using imaging software
   2. Use the vocabulary and terminology of digital imaging and photography
   3. Utilize techniques used in photography to control digital image levels, contrast, hue and saturation, composition, lens flare, light, motion, gray scale and color balance
   4. Employ digital imaging tools
   5. Demonstrate selection techniques for minor adjustments and alterations of photographic images
   6. Describe different methods for digital capture including how and when use of digital camera is best, its advantages and limitations
   7. Demonstrate digital printing and image uploading for the web
   8. Use service bureaus, photography store and custom services, and photo web processing sites
   9. Transfer large digital photographic files within a local area network and among various removable storage media
   10. Analyze the effect of digitally manipulated images on selected segments of society with emphasis on student understanding
of media ethics

PHTO58

1. Identify essential roles, phases, and tools for editing a video project
2. Organize, prioritize, and plan sequences of tasks related to video editing project
3. Use a major video editing program to produce completed compositions combining video, sound, and titles
4. Assemble video and sound clips based on an edit-decision list (EDL)
5. Evaluate the efficacy of a video/sound composition
6. Apply effective communication skills in order to work creatively on a small project team
7. Define major ethical and aesthetic issues in post production business today
8. Assemble sound, graphics, and typography into a video composition

III. MEASURABLE OBJECTIVES:

Upon completion of this course, the student should be able to:

A. Evaluate the legal (local, state, and federal) and ethical frameworks in order to safely operate common Unoccupied Aerial Systems (UAS), more commonly referred to as drones.
B. Create and produce an original professional presentation to tell a story using aerial photography, Videography, and/or other remote sensing data set.
C. Describe the varied uses of an Unoccupied Aerial System (UAS) in multiple disciplines and careers.
D. 3D Surface relief  
E. Point Cloud Models  
F. DEMs and Contour Maps  
X. Infrastructure Inspection  
XI. Post-Processing Software Options  
XII. Image Editing  
XIII. Report Writing and Deliverables  
XIV. Professional Presentations  

V. LAB CONTENT:  
I. Create a Project Proposal  
   A. Define Client Needs  
   B. Describe Flight Path  
   C. Describe Deliverables  
II. Describe and test Cinematography  
   A. Camera Settings  
   B. Light Settings  
   C. Filters  
   D. Special actions  
III. Story Board and Choreography  
   A. Description of total result  
   B. Create map of area  
   C. Direction/motion/action  
   D. Camera Settings  
   E. Program Flight  
IV. Drone Land Survey  
   A. Describe survey type  
   B. Describe survey area  
   C. Describe survey Specs  
   D. Camera Settings  
   E. Program Flight  
V. Infrastructure Inspection  
   A. Describe survey type  
   B. Describe survey area  
   C. Describe survey Specs  
   D. Camera Settings  
   E. Program Flight  
VI. Post-Processing Software Options  
   A. Migrate and backup data  
   B. Choose appropriate options  
   C. Review data report  
   D. Summarize data collected  
   E. Critique and Feedback  
VII. Image Editing  
   A. Migrate and backup data  
   B. Organize and rate  
   C. Develop (adjustments)  
   D. Output  
   E. Critique and Feedback  
VIII. Report Writing and Deliverables  
   A. Decide contents  
   B. Choose images  
   C. Choose software (MS word/Adobe)  
   D. Critique and Feedback  
IX. Professional Presentations  
   A. Oral presentation  
   B. Image Presentation  
   C. Lessons Learned  
   D. Critique and Feedback  

VI. METHODS OF INSTRUCTION:  
A. Critique - Instructor will review various professional projects and critique each based on a standardized methodology.  
B. Directed Study - Instructor will help each student to develop individualized proposals for a professional contract.  
C. Projects - Instructor will mentor cinematographic or survey based project that involve the students to process a data set from start to finish for a potential client.  
D. Student Presentations - Instructor will mentor students presentation techniques to create a summary of a project including a review of methodology, analysis, and budgetary concerns.  

VII. TYPICAL ASSIGNMENTS:  
A. Ten to twenty pages reading per session  
B. Short essay critiques  
C. Forum posts on class-related topics per session  
D. Practice and graded quizzes per session.  
E. Group and Individual projects  
F. Final project presentations  
G. Written paper discussing job possibilities in this developing industry  

VIII. EVALUATION:  
Methods/Frequency  
A. Exams/Tests  
   Once  
B. Quizzes  
   Weekly  
C. Projects  
   Once  
D. Group Projects  
   Once
IX. TYPICAL TEXTS:

X. OTHER MATERIALS REQUIRED OF STUDENTS: