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Course Outline for NAVI 203

FAA REMOTE PILOT CERTIFICATE EXAM PREPARATION

Effective: Fall 2022

I. CATALOG DESCRIPTION:
NAVI 203 — Noncredit

This course prepares students to pass the FAA Part 107 Remote Pilot Certificate exam. It will focus on the main sections of the exam including: the basic flight operations, the legal and ethical frameworks, safety considerations, airspace classification, operating requirements, flight restrictions and the effects of weather on a Drone's Performance.

Strongly Recommended
NAVI 201 - Orientation to Drones and Unoccupied Aerial Systems (UAVs)

NAVI 202 - Drone Aerial Survey, Photography and Videography

Grading Methods:
Pass/No Pass

Discipline:
- Aviation

Noncredit Category
J - Workforce Preparation

	MIN
Total Noncredit Hours:	27.00

II. PREREQUISITE AND/OR ADVISORY SKILLS:

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

A. NAVI201
   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. Safely operate a UAS and perform a controlled take-off, demonstrate basic flight controls, and execute a landing.
B. NAVI202
   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.

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. Explain the conditions involved in safely operating a drone, including flight dynamics, airspace restrictions, and weather environments.
C. Demonstrate knowledge of the FAA regulations for piloting drones by completing the written practice Remote Pilot Certification test with a score of 70% or higher.

IV. CONTENT:
   I. UAS Uses
      A. Real Estate
      B. Agriculture
      C. Building Inspection
      D. Public Safety
         1. Police
         2. Fire
         3. Search and rescue
      E. Surveying/Mapping
      F. Wildlife management
      G. Forest management
      H. Video production
      I. Photography
      J. Architecture
      K. Journalism
      L. Equipment maintenance

II. History of Flight
    A. FAA
    B. Notices to Airmen
    C. Pilot certification
III. Aeronautical Decision Making
    A. Hazards and Risk
        a. Assessing risk
        b. Mitigating risk
    B. Human factors
    C. Decision making process.
    D. Situational awareness
    E. Risk management
IV. Mechanics of Flight
    A. Weather
    B. Aerodynamics
        1. Lift
        2. Drag
        3. Roll
        4. Pitch
        5. Yaw
V. UAS Equipment and Technology
    A. Size
        1. Micro
        2. Mini
        3. Small
        4. Large
    B. Type
    C. Features
        1. GPS
        2. Cameras
        3. Controllers
    D. Propulsion
        1. Electric
        2. Gas
    E. Performance
        1. Speed
        2. Battery Life
    F. Parts
        1. Body
        2. Motors
        3. Propellers
        4. Batteries
        5. Cameras
        6. Controllers
        7. Storage Option
    G. Loading
        1. Weight
        2. Stability
        3. Load factors
        4. Balance
VI. Safety and Ethics
    A. Personal Safety
    B. Property Safety
    C. Privacy Concerns
VII. UAS Laws and Regulations
    A. FAA Regulations
        1. Airspace Issues
        2. Hobby vs. Commercial usage
        3. Licensing
    B. Local Law
    C. State Laws
VIII. Flying
    A. Flight planning
    B. Hovering and Tilting
    C. Flight Patterns
        1. Tracking
        2. Following
        3. Waypoints
    D. Flight Logging
    E. Aircraft Maintenance
IX. FAA Certification
    A. Remote Pilot
    B. Process
    C. Re-certification
X. Weather
    A. Surface Aviation Weather Observations
        1. Wind and currents
        2. Atmospheric stability
        3. Fronts
        4. Temperature/Dew Point Relationship
        5. Thunderstorms
        6. Visibility
    B. Effects of weather on small UAVs
    C. Aviation weather Reports
    D. Aviation Forecasts
    E. Convective Significant Meteorological Information (WST)
    F. Pilot ResponsibilityCharts
XI. Air Traffic Control
    A. Airport categories
    B. Traffic Patterns

XII. Airspace
    A. Controlled Airspace
    B. Uncontrolled Airspace
    C. Special Use Airspace
    D. Air Traffic Control and the National Airspace System
    E. Operating in the Various Types of Airspace
        1. Unmanned Aircraft Systems
    F. Visual Flight Rules (VFR) Terms & Symbols
XIII. Charts
    A. Aeronautical Charts
    B. Latitude and Longitude (Meridians and Parallels)
    C. Flight Planning
XIV. Visual Line of Sight(VLOS)
XV. Crew Resource Management
XVI. Radio Communication Procedures
XVII. Physiological Factors Affecting Pilot Performance
    A. Drugs and Alcohol
    B. Sleep and exhaustion
    C. Vision and Flight
XVIII. Maintenance and Preflight Inspection
XIX. Registration and Marking Requirements
XX. Resources, software, and related information.

V. METHODS OF INSTRUCTION:

A. **Discussion** - The description and explanation of case studies from FAA that describe common ethical and legal circumstances.
B. **Lecture** - Review of textbook and related teaching materials using traditional lecture formats accompanied by audio/visual software, hand outs, and online guides.
C. **Demonstration** - The demonstration of proper operating procedures for the pre-flight, flight and post-flight procedures.
D. **Written Exercises** - Assess the comprehension of charts and airspace restrictions through scenario based short response exercises.

VI. TYPICAL ASSIGNMENTS:

A. Ten to twenty pages of reading per week
B. Short essay reposnses to ethical scenarios
C. Weekly forum posts on class-related topics
D. Weekly practice and graded quizzes.
E. FAA exam preparation worksheets
F. Midterm and Final exams
G. Written paper discussing job possibilities in this developing industry

VII. EVALUATION:

Methods/Frequency

A. Exams/Tests
    At each major thematic section
B. Quizzes
    weekly
C. Home Work
    weekly

VIII. TYPICAL TEXTS:

1. Federal Aviation Administration (FAA). 1. Federal Aviation Administration (FAA) Pilot's Handbook of Aeronautical Knowledge . Federal Aviation Administration (FAA) , 2016.
2. Federal Aviation Administration (FAA). Remote Pilot - Small Unmanned Aircraft Systems Study Guide (FAA-G-8082-22).. Federal Aviation Administration (FAA) , 2018.
3. Federal Aviation Administration (FAA). Aeronautical Chart User's Guide. Federal Aviation Administration (FAA) , 2018.
4. FAA Chart: VFR Sectional SAN FRANCISCO SSF (Current Edition)

IX. OTHER MATERIALS REQUIRED OF STUDENTS: