

# CAVIT Drone Technology Program

Describe the major types, groups, and categories of UAS **DT1.0**

- 1.1** Explain the term Unmanned Aircraft System **DT1.1**

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- 1.2** Explain the changing view on UAS **DT1.2**

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- 1.3** Explain the evolution of commercial UAS operations in the United States **DT.1.3**

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- 1.4** Identify the major challenges facing the UAS industry **DT1.4**

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- 1.5** Explain UAS component reliability and operational considerations **DT1.5**

Recall key aspects of the UAS flight approval and authorization process **DT2.0**

- 2.1** Explain how the FAA enforces regulations and minimum standards **DT2.1**

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- 2.2** Explain how the FAA regulates aircraft, airmen, and airspace **DT2.2**

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- 2.3** Explain what is the National Airspace System (NAS) **DT2.3**

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- 2.4** Explain what are the regulatory limits on UAS **DT2.4**

Recognize legal and ethical considerations for specific types of UAS operations **DT3.0**

- 3.1** Explain the regulations and policies currently in place for UAS operations **DT3.1**

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- 3.2** Explain Federal Aviation Regulations (FAR) **DT3.2**

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- 3.3** Explain the limitations and requirements of Visual Flight Rules (VFR) **DT3.3**

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- 3.4** Explain state and local rules and regulations governing UAS **DT3.4**

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- 3.5** Define professionalism and ethics **DT3.5**

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- 3.6** Describe the foundations of an ethical code of conduct for UAS operators **DT3.**

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- 3.7** Explain standards of practice for UAS professionals **DT3.7**

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- 3.8** Identify the top ethical issues facing sUAS remote pilots **PT3.8**

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- 3.9** Examine case studies and make judgments about the ethical and professional use of UAS technology **PT3.9**

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- 3.10** Explain standards of profession and how to apply professionalism in everyday operations **PT3.10**

List the primary types of sensors used for data collection DT4.0

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4.1 Explain the field of robotics and the subset of aerial robots DT4.1

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4.2 Identify common components of unmanned aircraft DT4.2

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Compare and contrast types of detect, sense, and avoid systems DT5.0

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5.1 Explain energy sources available for UAS DT5.1

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5.2 Explain how robotic aircraft maneuver and navigate DT5.2

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Differentiate the various levels of UAS Automation and Autonomy DT6.0

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6.1 Explain aircraft capabilities and limitations associated with different platform categories DT6.1

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6.2 Explain UA aerodynamic principles and performance factors DT6.2

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Demonstrate proper UAS safety procedures DT7.0

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7.1 Explain various airspace that drones operate inside of DT7.1

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7.2 Explain the classes of airspace DT7.2

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7.3 Explain Notices to Airmen information reporting system DT7.3

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7.4 Describe the types and causes of human errors DT7.4

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7.5 Explain human limitations in perception, processing, and performance DT7.5

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7.6 Describe the physiological effects of drugs and alcohol DT7.6

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7.7 Explain the aspects of UAS design and operations that hinder or limit human function and cognition DT7.7

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7.8 Describe methods for dealing with automation and the lack of sensory cues DT7.8

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7.9 Examine the evolution of CRM as a control for error DT7.9

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7.10 Explain the purpose of CRM DT7.10

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7.11 Explain decision behaviors as a CRM skillset DT7.11

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7.12 Explain Situational Awareness (SA) DT7.12

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7.13 Identify and explain the need for standard communication DT7.13

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7.14 Explain non-technical skills that can improve the function and efficiency of a UAS crew DT7.14

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Explain the basics of airplane systems and understanding of aerodynamic principles DT8.0

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8.1 Explain the four forces that act upon a UAS DT8.1

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8.2 Describe the six degrees of freedom. DT8.2

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Identify necessary information about the environment in which the vehicle will be flown such as airport facilities, air traffic control services, communication procedures, and sources of flight information DT9.0

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- 9.1 Examine other elements that affect a UAS's operation DT9.1
  - 9.2 Describe aspects of the physical environment that pose a hazard to UAS DT9.2
  - 9.3 Explain the concepts of weather as they pertain to aviation DT9.3
  - 9.4 Explore official and unofficial sources of weather that can inform a remote pilot's preflight decisions DT9.4
  - 9.5 Interpret "official" sources of weather to make sound decisions DT9.5
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Describe variable atmosphere and its effect on aircraft operations, how to maximize safety minimizing exposure to weather-related aviation hazards. DT10.0

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- 10.1 Interpret center NOTAMs DT10.1
  - 10.2 Explain aviation communications DT10.2
  - 10.3 Explain the essential information required in aviation communications DT10.3
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Justify aircraft capabilities and limitations in terms of performance parameters DT11.0

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- 11.1 Describe how stabilization, control, and power can be manipulated to fly a UAS DT11.1
  - 11.2 Describe the aerodynamic principles that affect UAS performance. DT11.2
  - 11.3 Explain the effects of weather, temperature, and system weight on unmanned aircraft performance DT11.3
  - 11.4 Explain the differences in rotor and fixed-wing aerodynamics DT11.4
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Execute the basics of navigation using charts and radio aids DT12.0

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- 12.1 Interpret aeronautical charts to determine airspace for a given location DT12.1
  - 12.2 Explain the Aeronautical Information Manual to make a radio call DT12.2
  - 12.3 Explain airport operations and Traffic-pattern protocols DT12.3
  - 12.4 Explain UAS limitations and regulations DT12.4
  - 12.5 Explain the reporting requirements for UAS operations DT12.5
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Demonstrate the application of aeronautical decision-making principles and flight-related physiological factors. DT13.0

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- 13.1 Define aeronautical decision-making DT13.1
  - 13.2 Examine the steps for sound aeronautical decision-making DT13.2
  - 13.3 Identify hazards associated with UAS operations DT13.3
  - 13.4 Explain various models for decision-making DT13.4
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**13.5 Apply good aeronautical decision-making** DT13.5

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**13.6 Describe strategies for dealing with task saturation or overloads** DT13.6

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**13.7 Demonstrate the ability to think independently while exercising adaptability to stressful situations** DT13.7

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**13.8 Explain airworthiness inspections** DT13.8

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**Perform Drafting  
Task** DT14.0

**14.1 Make freehand sketches (e.g., line weights, hidden lines, center lines, and dimensioning)** DT14.1

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**14.2 Make CAD representations from freehand sketches** DT14.2

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**14.3 Determine shapes and sizes of surfaces from alternative views (e.g., orthographic, projection view, first angle projection, and third angle projection)** DT14.3

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**14.4 Make CAD drawings using geometric construction techniques** DT14.4

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**14.5 Make dimensional CAD drawings (e.g., 2D and 3D)** DT14.5

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**14.6 Explain basic knowledge of geometric dimensioning and tolerancing** DT14.6

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**14.7 Interpret unmanned aircraft system (e.g Drone Body and controller) plans** DT14.7