Drugs and Alcohol

Session Time: One, 50-minute session

DESIRED RESULTS

ESSENTIAL UNDERSTANDINGS

Pilots must be aware of their physical and mental condition in order to conduct safe flights.

Pilots must understand how the consumption of alcohol or drugs, including over-the-counter and prescription medications, can affect their ability to fly safely.

ESSENTIAL QUESTIONS

1. What considerations must a pilot take into account if they have consumed alcohol or taken any medications or drugs?

LEARNING GOALS

Students Will Know

- How alcohol and drugs can impair the ability to fly.
- FAA regulations regarding the use of alcohol and drugs.
- How to determine whether or not a medication is approved for use while flying.
- When to ground themselves after using alcohol or taking medication.

Students Will Be Able To

- *Identify* the known side effects of some common drugs. [DOK-L1]
- *Assess* the safety of a proposed flight based on scenarios related to alcohol or medication use. [DOK-L3]

ASSESSMENT EVIDENCE

Warm-up
After watching a video on the effects of alcohol, students will participate in a class discussion in which they answer questions related to alcohol consumption and flying.

Formative Assessment
Students will complete a brief written quiz covering the information presented to this point in the lesson, and participate in a class discussion of the answers.

Summative Assessment
Students will work individually or in small groups to analyze four scenarios involving the use of drugs or alcohol prior to planned flights.

LESSON PREPARATION

MATERIALS/RESOURCES

- Drugs and Alcohol Presentation
- Drugs and Alcohol Student Activity 1
- Drugs and Alcohol Student Activity 2
- Drugs and Alcohol Student Activity 3
    - Laptop, notepad, or other web-ready device
- Drugs and Alcohol Teacher Notes 1
- Drugs and Alcohol Teacher Notes 2
- Drugs and Alcohol Teacher Notes 3
- Drugs and Alcohol Student Notes

LESSON SUMMARY

Lesson 1: Drugs and Alcohol

The lesson begins with a Warm-Up in which students discuss the effects of alcohol on the brain and personal performance. Students speculate on how alcohol might affect a pilot, and express their thoughts on whether the rules for alcohol and flying should be the same as those for alcohol and driving.

Students then study an FAA table showing the effects of various amounts of alcohol, along with information on the body's responses to alcohol. Students learn about the FARs related to drinking and drug-use for pilots. Both legal and illegal drugs are discussed, as are their effects on pilots flying at altitude.

During the next part of the lesson, students complete the Formative Assessment to demonstrate retention of the material presented thus far. They then learn various strategies and personal minimums that enable pilots to steer clear of the harmful effects of drugs and alcohol while flying, including conditions in which pilots should ground themselves.

Finally, students complete three sample FAA Knowledge Test questions pertaining to the use of alcohol and drugs, and complete a Summative Assessment of the learning material presented in this lesson. If time permits, a Going Further activity lets students explore AOPA's medications database.

BACKGROUND

Common sense tells us that pilots, drugs, and alcohol don't mix. While that's certainly true, the FAA and others have quantified the effects of alcohol on the body to serve as an objective rationale for regulations. Numerous studies involving alcohol consumption and the performance of piloting skills have been conducted, and the results confirm the intuitive conclusions of most people: alcohol has profound, negative effects on motor skills, coordination, judgment, and decision making.

The FAA has promulgated several rules concerning alcohol and flight, and pilots are directed to those regulations early in their training. The regulations are clear about time requirements ("8 hours bottle to throttle" is a common saying), blood alcohol content (less than 0.04%), and flying while still affected by prior drinking (i.e., flying "under the influence").

Restrictions also apply to the taking of medications, legal, and illicit drugs. There are strong prohibitions against flying when a pilot may be impaired by these substances.

MISCONCEPTIONS

Just as there are prohibitions against driving while under the influence of alcohol, there are also rules against flying after drinking. Students might assume these rules are the same, but in fact the rules related to flying are considerably more

stringent than those for driving. This is because flying is much more complex, potentially affects more people, and generally requires an added level of alertness and situational awareness that could be severely impaired by alcohol.

Clearly, strong prescription medications, such as pain killers and muscle relaxants, will most likely affect a pilot's performance. What may not be so apparent is that many over-the-counter medications can also affect a pilot. Over-the-counter medications that people take routinely for conditions like the common cold, headache, or allergies can have immediate or even lasting effects that could affect a pilot's performance. The FAA has recognized this and provides pilots with a "go/no-go" resource to assess whether or not over-the-counter medications are safe to take before flight.

Additionally, drugs that have no significant effect on a pilot on the ground can have profound effects in the air at altitude. Students will recall that less oxygen is available at altitude, and this can exacerbate the effects of drugs like antihistamines and decongestants. Pilots must avoid these drugs, even though they can be taken safely at home and when on the ground.

Another misconception is that law enforcement personnel check pilots for alcohol or drug abuse, much as police officers set up DUI checkpoints on the roads and highways. In truth, the FAA depends on pilots themselves to follow the rules and to remain free from the effects of these substances. Often, the only time an impaired pilot is discovered is when a fellow crew member suspects a problem and reports the pilot to other authorities, or when there is an accident and the pilot is found to have ingested an intoxicating substance. The aviation community depends highly on the honor system.

DIFFERENTIATION

To support student engagement and motivation during the ENGAGE and EXPLORE sections of the lesson plan, have students perform Think-Pair-Share when answering the questions. This can help ensure all students are participating.

To support students with low working memory during the EXPLAIN section of the lesson plan, pass out the **Drugs and Alcohol Student Notes** at the beginning of the section and encourage students to add additional notes to the handout. Give further guidance to students by encouraging them to use the following headings to help organize their notes: Effects of Alcohol; FAA Regulations on Alcohol; Effects of Medications and Other Drugs; and FAA Regulations on Medications and Other Drugs.

LEARNING PLAN

ENGAGE

Teacher Material: Drugs and Alcohol Presentation

Session 1

Slides 1-3: Introduce the topic and learning objectives of the lesson.

Slide 4: Conduct the **Warm-Up**.

Warm-Up

Play the following video for students:

- "Alcohol Effects on Brain and Body" (Length 1:52)
  https://video.link/w/tcB3
  For teachers unable to access Safe YouTube links, the video is also available here:
  https://www.youtube.com/watch?v=V2Aj-iJ6p38

Then, ask students to answer and discuss these questions relating to the effects of alcohol.

- What effects does alcohol have on the body and brain?

Alcohol causes the brain to relay information more slowly. It makes the drinker feel drowsy, suffer from memory loss and loss of coordination, and experience sudden mood swings, and it tricks the drinker into believing they are less impaired than they actually are. Excessive or frequent drinking over time changes the brain's structure, leading to addiction, and can cause a variety of diseases to the liver, heart, and other organs.

- How would you expect a pilot experiencing these effects to perform?

Answers will vary; however, students should recognize that a pilot under the influence of alcohol will be less effective at flying a plane. Slow responses, for example, could result in an accident, and poor judgement may lead a pilot to violate a regulation.

- Should the rules for alcohol consumption be the same for pilots as for automobile drivers? Why or why not?

Answers will vary; however, students should recognize that the increased complexity of the flying environment and the effects of altitude on an intoxicated pilot mean that more stringent rules regulating drinking make sense for pilots.

EXPLORE

Teacher Material: Drugs and Alcohol Presentation

Slides 5-6: This diagram, created by the National Institutes of Health (NIH), shows the range of effects that various amounts of alcohol can have on people. While the severity of effects can vary depending on factors such as weight and genetic makeup, this diagram is an appropriate representation of typical behavioral and psychological effects at the various blood alcohol content (BAC) levels. (BAC is also sometimes referred to as blood alcohol concentration; the terms are synonymous.)

Note that differing levels of alcohol can produce dramatically different effects. Up to 0.05 BAC, the effects are negligible; most people act and perform normally. Keep in mind that BAC goes up by about 0.02 for each drink (this is the average for a 180-lb person), so having as few as 2–3 drinks can produce noticeable effects. Generally, people who weigh less will display the effects sooner.

Teaching Tips

Chapter 17 of the PHAK contains a similar diagram (Figure 17-8) that shows typical effects as BAC increases:

https://www.faa.gov/regulations_policies/handbooks_manuals/aviation/phak/media/19_phak_ch17.pdf

It contains more details than the NIH diagram, including the pure alcohol content of typical servings of beer, wine, and other alcoholic beverages.

Questions

- What is the maximum BAC allowed in your state for driving?
  Allow students to guess or perform an online search, then inform them of the answer for your state. (In most states, the maximum is 0.08.)
- How many drinks does it take to reach that level?
  At an increase of 0.02 per drink, up to four drinks can put a driver over the legal limit; for many people, as few as two drinks can produce a BAC of 0.08.
- What do you think the legal limit is for flying?
  Student answers may vary, but the correct answer is < 0.04 (half of the driving legal limit in most states). Emphasize that regardless of their BAC, FAA regulations prohibit pilots from flying until 8 hours have passed since their last drink.

EXPLAIN

Teacher Materials: Drugs and Alcohol Presentation, Drugs and Alcohol Teacher Notes 1
Student Materials: Drugs and Alcohol Student Activity 1, Drugs and Alcohol Student Notes

Slide 7: Pilots must consistently perform at their best to ensure the safety of a flight. Peak performance must be both physical and mental, and when pilots are impaired for any reason—physical, emotional, or chemical—they can endanger themselves, their passengers, and people on the ground.

Alcohol impairs both decision-making and motor skills. The ability to make good judgments quickly can be dramatically diminished, and simple acts such as manipulating the controls or talking on the radio can be severely affected. Decision making can be significantly impaired at relatively low levels of consumption. Pilots must make hundreds of decisions during the course of a flight, so impaired decision making is a particular concern.

Alcohol consumption impairs judgment, reduces reasoning ability, reduces coordination, decreases sense of responsibility, and reduces attention span. As little as one drink can slow muscle reflexes, impair vision and hearing, and increase error frequency.

Alcohol acts as a depressant—much like a general anesthetic. Its effects are both mental and physical. Between 80 and 90 percent of the alcohol in a drink is absorbed into the bloodstream within 30 minutes if it is consumed on an empty stomach, and it takes the body about three hours to rid itself of all the alcohol in a single drink.

Slide 8: The more alcohol in a person's blood, the longer it takes to wear off. While blood alcohol levels can return to near-normal fairly quickly after just one drink, larger amounts of alcohol can take several hours, or even more than a day, to dissipate. Studies show that BAC can remain high for up to 16 hours in many people, and far longer in people with certain diseases or after drinking extreme amounts of alcohol.

When alcohol is present in a person's blood, the debilitating effects are more pronounced at altitude. Alcohol inhibits the body's ability to take up and utilize oxygen from the bloodstream at the cellular level, creating a condition called histotoxic hypoxia. Cells affected by this condition operate less efficiently. Since there is less oxygen at altitude, the condition is exacerbated. When the cells responsible for metabolizing and filtering alcohol in the body perform less efficiently, the effects of alcohol are felt sooner and more strongly; at higher altitudes, therefore, pilots with alcohol in their system are especially likely to become unable to perform their duties in flight.

Teaching Tips

FARs related to airlines have strict guidelines concerning the serving of alcohol to passengers. Intoxicated passengers who cause a disturbance or interfere with a flight crew may be guilty of a felony and subject to fines and jail time.FAR 91.17 also prohibits a pilot from allowing a passenger who appears intoxicated to board a general aviation aircraft. This is discussed further in the next slide.

Slide 9: The public depends on pilots to behave responsibly, maintain their ability to perform their duties, and prioritize safety during all operations. Accordingly, it only makes sense that the FAA would create regulations that limit the consumption of alcohol by pilots.

The FARs (14 CFR 91.17) state very clearly what those limitations are. For starters, no pilot may operate an aircraft unless at least eight hours have elapsed since the last consumption of alcohol. Pilots often state this requirement as "8 hours throttle to bottle." Even a single sip of wine at dinner starts this clock, requiring the pilot to refrain from operating an aircraft for at least eight hours.

No pilot may operate an aircraft if they are under the influence of alcohol. That obviously restricts the pilot from flying if intoxicated (even if eight hours have passed), but it also prohibits operations if the pilot is feeling hungover or groggy, or even has a headache induced by alcohol. Any adverse effect that results from the consumption of alcohol meets the standard of' "under the influence" and keeps the pilot grounded until conditions improve.

Pilots are also prohibited from flying if their BAC is at or above 0.04. This can be measured by either a blood test or a breathalyzer test. Refusing to take these tests when requested to do so by a law enforcement officer is grounds for immediate suspension or revocation of the pilot's certificate.

Many pilots impose much stricter standards on themselves. Some pilots don't drink at all, especially if they could be called to duty within the next several days. A common personal minimum for many pilots is the "24 hour rule": no drinking within 24 hours of the next flight.

If a pilot anticipates carrying a passenger who may be intoxicated, FAR 91.17 prohibits the pilot from carrying that passenger aboard the aircraft. While a designated driver is a good idea on the ground, a "designated pilot" is not a concept that is allowed under the FARs.

Slide 10: Medications and other drugs—legal and illegal, prescription and over-the-counter—can have many different effects on the body. These can be especially important for pilots, and the FAA has created regulations detailing the use of these substances. FARs do not reference specific drugs directly, but they do require pilots to ground themselves for a number of health-related reasons, including those that may be related to the consumption of medications. As a rule, any substance that has an effect on consciousness, alertness, reflexes, or motor coordination are prohibited for use by pilots. FARs 91.17 and 61.53 prohibit the use of any drug that affects the user's faculties in any way contrary to safety.

Pilots are not allowed to fly if:

1. They know they have a medical condition that would make them unsafe to fly, even if they recently passed a medical examination. Sometimes pilots get sick soon after an exam, so they must ground themselves if they develop a condition that could make them unsafe.
2. They are taking a medication that was given to them after their last FAA medical exam, and that medication could affect their ability to fly safely. Again, the system depends on pilots to self-regulate if they develop a medical condition or begin taking a drug that could affect their ability to perform their pilot duties.

Even though specific drugs are not mentioned in the regulations, the FAA routinely examines popular and common drugs, including both prescription and over-the-counter medications, and makes determinations as to their safety for

flight. It's important to keep in mind that reactions to a drug can vary widely from individual to individual. Even if a drug is considered acceptable for flying, a pilot who feels that the side effects impair their ability to safely operate the aircraft must remain on the ground.

As with alcohol, the effects of a drug can be greater at altitude. So, it's possible that a medication that causes no negative effects on the ground could cause dangerous side effects in the air (histotoxic hypoxia may result). Other factors, such as fatigue or dehydration, can also increase the side effects from drugs.

Slide 11: Many people, even beginning pilots, assume that if a drug is approved for use on the ground it must also be approved for pilots. This is not necessarily true. Many common cold and allergy medications—both over-the-counter (OTC) and prescription—can cause issues for pilots and must be avoided. Even a mild illness such as a cold, particularly if it comes with symptoms such as sinus congestion or persistent coughing, can make flying difficult or uncomfortable and may be reason enough to stay on the ground.

For example, Benadryl and other OTC drugs containing the antihistamine diphenhydramine, used extensively for allergy relief, are known to cause drowsiness and can remain in the body for an extended period of time. Additionally, cough suppressants, blood pressure medications, anti-diarrheal medications, and motion-sickness medications can impair memory, alertness, or judgment.

Painkillers are among the most common medications taken in daily life, and they too can cause problems. Painkillers are divided into two broad categories: analgesics and anesthetics. Broadly speaking, analgesics reduce pain, whereas anesthetics are intended to eliminate pain (often by altering the user's consciousness).

- Analgesics like aspirin, acetaminophen, and ibuprofen are generally allowed while flying because they have few side effects. However, if a pilot has an allergic reaction to one of these drugs, they should not fly.
- By contrast, anesthetics—such as codeine, propoxyphene, oxycodone, and meperidine—cause side effects such as dizziness, headaches, nausea, and vision problems and must not be taken while flying.

Slide 12: While many prescription drugs are approved for pilots, some are not. Restricted prescription drugs have side effects that can impact a pilot's ability to think clearly, make good decisions, or remain alert enough to perform their duties. Here are several common examples:

- Prescription grade stimulants (amphetamines for example) and depressants (decongestants and blood pressure medications for example) have the potential to cause problems.
- Antibiotics are another class of drugs that may or may not be safe for flying. While many antibiotics are safe to use while flying, others can cause side effects such as balance problems, nausea, and vomiting.

Whether a drug is safe for pilots to use depends on the drug and the pilot. The FAA has developed a list of prohibited drugs, and the use of these is automatically disallowed. These drugs are listed here: https://www.faa.gov/about/office_org/headquarters_offices/avs/offices/aam/ame/guide/pharm/dni_dnf/.

However, many other drugs that are not explicitly prohibited by the FAA may affect an individual pilot in such a way as to create an impairment. In those cases, it is incumbent on pilots to ground themselves when they recognize that a drug is having an adverse effect. These drugs must be determined safe or unsafe on a pilot-by-pilot, case-by-case basis.

Slide 13: Distribute **Drugs and Alcohol Student Notes**, which provides students with a table (Figure 17-9 from the PHAK) that shows commonly used drugs and alcohol, the ailments they're used to treat, and the possible side effects from taking them. Notice that many of the side effects listed could seriously impair a pilot's ability to perform their duties and function safely. Advise students to refer to this handout when answering questions below and in future activities.

Questions

1.

What side effects from nicotine could adversely affect pilot performance?

impaired night vision, hypoxia due to carbon monoxide poisoning at altitude

1. Why would a pilot take an over-the-counter antihistamine? What side effects could impair the pilot's ability to fly safely at night?

Antihistamines are used to relieve allergy symptoms (hay fever, etc.). Side effects are drowsiness, which can cause loss of alertness, especially at night when the view from the cockpit is featureless terrain.

Slide 14: Conduct the **Formative Assessment.**

Formative Assessment

Distribute **Drugs and Alcohol Student Activity 1** and instruct students to work individually to answer the questions. They may reference the **Drugs and Alcohol Student Notes** as needed. When students are finished, lead a class discussion of the answers. Correct answers are included in **Drugs and Alcohol Teacher Notes 1**.

[DOK-L1; *identify*]

EXTEND

Teacher Material: Drugs and Alcohol Presentation

Slides 15-16: While it is vitally important for pilots to follow all FARs to the letter, many pilots choose to create personal minimums and policies that add an increased layer of safety to their operations. For them, simply adhering to the regulations is not enough: they create a series of rules they follow, and many of these have become accepted within the aviation community as a set of best practices. Some of these practices include:

- waiting at least 24 hours after consuming alcohol before flying.
- waiting at least 48 hours after the first dose of a new medication before flying to determine whether or not it causes side effects.
- waiting at least 5 times the maximum dosing cycle after taking a medication that causes hazardous side effects before flying. For example, if an antihistamine that causes drowsiness can be taken every 4 to 6 hours, the pilot should wait at least 30 hours—5 cycles 6 hours—after taking the last dose before flying.
- avoiding using more than one medication at a time, as the side effects can be unpredictable.

Though the FAA does not publish a comprehensive list of over-the-counter medications that should not be used before flying, they have released a chart that helps pilots make "go/no-go" decisions based on the medication they wish to take. This chart can be found here:

- https://www.faa.gov/licenses_certificates/medical_certification/media/OTCMedicationsforPilots.pdf

In addition, AOPA has developed a medications database that has proven very useful to pilots. The AOPA database can be found here:

- https://www.aopa.org/go-fly/medical-resources/medications-database

Teaching Tips

To access AOPA's database, scroll to the bottom of the web page and select the Search box. Students will need to create a free AV8Rs account, which they can do here:

- https://www.aopa.org/login/AV8RS?_ga=2.137479730.346784507.1585928910-2085564443.1570474899

The table on Slide 16 displays the recommended "no fly" time for medications based on their recommended dosage intervals. Note that the standard recommendation is to wait five times the maximum dosage interval before flying, especially if the pilot has not taken the medication before or has experienced a side effect.

Slide 17: Other best practices relate to personal diet and exercise. Flying is a sedentary activity: pilots may sit still for many hours at a time in careers that last years or decades. Many pilots spend much of their time living in hotel rooms and eating in restaurants, activities that are not conducive to living a healthy lifestyle. For this reason, it is very important for pilots to pay attention to their personal dietary and exercise habits. Some of the recommendations for best practices are shown on the slide:

- Eat regular, balanced meals.
- Stay hydrated by drinking plenty of water, even when you're not thirsty.
- Get adequate sleep before flying.
- Stay physically fit through regular exercise.

Slide 18: The FAA has developed a tool to assist pilots in determining whether they should fly based on their health that day and on the medications they are taking. This checklist questionnaire first asks pilots to answer a series of questions, then leads them in a process that helps them make the decision whether to fly or not.

Teaching Tips

Instruct students to open the website below, then guide them through the questionnaire: https://www.faa.gov/licenses_certificates/medical_certification/media/OTCMedicationsforPilots.pdf

Additionally, pilots should always self-assess their fitness for flight using a checklist like the IMSAFE list: https://www.boldmethod.com/blog/lists/2019/09/im-safe-acronym/

Note that not all approved medications are permitted directly before a flight. Some require waiting periods before flying. Benadryl is one such med. Widely used for allergy relief, Benadryl can have serious side effects for pilots, including vision impairment, drowsiness, and loss of focus and attention. While Benadryl is approved for use by pilots, that approval comes with a catch. Pilots must wait 30 hours after taking Benadryl to fly; if they fly before those 30 hours have elapsed they would be in violation and could risk severe penalties by FAA.

EVALUATE

Teacher Materials: Drugs and Alcohol Presentation, Drugs and Alcohol Teacher Notes 2
Student Materials: Drugs and Alcohol Student Activity 2, Drugs and Alcohol Student Notes

Slides 19-24: Review the Knowledge Exam summary questions.

Slide 25: Conduct the **Summative Assessment**.

Summative Assessment

Distribute **Drugs and Alcohol Student Activity 2**. Students may complete this assessment individually, or you may divide the class into small groups. Instruct students or student groups to consider each scenario and answer the questions posed. If time permits, discuss answers as a class. Consider choosing a spokesperson from each group to answer for the group; students in other groups can then be asked if they agree with that group's answer, and explain their reasoning. Answers to questions are available in **Drugs and Alcohol Teacher Notes 2**.

Students may refer to their notes, the FAA's "go/no-go" checklist for OTC medications, and the PHAK excerpt in the Student Notes.

[DOK-L3; *assess*]

Summative Assessment Scoring Rubric

- Follows assignment instructions
- Postings show evidence of one or more of the following:
    - Understanding the FAA regulations concerning the use of drugs and alcohol
    - Ability to distinguish between approved and unapproved medications
    - Ability to access information about approved/unapproved medications
- Demonstrates ability to apply knowledge to realistic scenarios
- Contributions show in-depth thinking including analysis or synthesis of lesson objectives

Points	Performance Levels
9-10	Demonstrates a thorough understanding of drug and alcohol use under FAA regulations including approved and unapproved medications Responds to each of the 4 scenarios accurately and correctly.
7-8	Demonstrates a sufficient understanding of drug and alcohol use under FAA regulations including approved and unapproved medications Responds to 3 of the scenarios accurately and correctly.
5-6	Demonstrates an insufficient understanding of drug and alcohol use under FAA regulations including approved and unapproved medications Responds to 2 of the scenarios accurately and correctly.
0-4	Work is inaccurate and incomplete. Demonstrates little or no understanding of drug and alcohol use under FAA regulations including approved and unapproved medications Responds to 0 to 1 of the scenarios correctly.

GOING FURTHER

Teacher Material: Drugs and Alcohol Teacher Notes 3
Student Material: Drugs and Alcohol Student Activity 3

Slide 26: AOPA has published a searchable database of commonly-used drugs, listing what ailments they are used to treat, whether they are FAA-approved for pilots, and the basis on which the FAA's approval was granted. Pilots can simply input the name of a drug into the database search field to get an immediate answer on approval status.

Distribute **Drugs and Alcohol Student Activity 3**. Instruct students to log into the database to complete the activity table. Note that students may need to sign up for a free AOPA AV8Rs account to access the medications database. If that's the case, they can sign up here:

- https://www.aopa.org/login/AV8RS?_ga=2.137479730.346784507.1585928910-2085564443.1570474899

For drugs found to be disapproved, have students speculate on the drugs' side effects and why the FAA decided to disallow use. If time allows, ask the follow-up questions in the activity. Correct answers are included in **Drugs and Alcohol Teacher Notes 3**.

STANDARDS ALIGNMENT

COMMON CORE STATE STANDARDS

- **RST.11-12.2** - Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
- **RST.11-12.4** - Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 11-12 texts and topics*.
- **WHST.11-12.6** - Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.
- **WHST.11-12.8** - Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
- **WHST.11-12.9** - Draw evidence from informational texts to support analysis, reflection, and research

FAA AIRMAN CERTIFICATION STANDARDS

PRIVATE PILOT
I. Preflight Preparation
Task H. Human Factors

- Knowledge The applicant demonstrates understanding of:
  - **PA.I.H.K1** The symptoms (as applicable), recognition, causes, effects, and corrective actions associated with aeromedical and physiological issues including:
    - **PA.I.H.K1a** Hypoxia
    - **PA.I.H.K1g** Stress
    - **PA.I.H.K1h** Fatigue
    - **PA.I.H.K1i** Dehydration and nutrition
  - **PA.I.H.K2** Regulations regarding use of alcohol and drugs.
  - **PA.I.H.K3** Effects of alcohol, drugs, and over-the-counter medications.
  - **PA.I.H.K4** Aeronautical Decision-Making (ADM).

- Risk Management The applicant demonstrates the ability to identify, assess and mitigate risks encompassing:
    - **PA.I.H.R1** Aeromedical and physiological issues.
    - **PA.I.H.R2** Hazardous attitudes.
- Skills The applicant demonstrates the ability to:
    - **PA.I.H.S2** Perform self-assessment, including fitness for flight and personal minimums, for actual flight or a scenario given by the evaluator.

REFERENCES

- FAA Airplane Flying Handbook
- Pilot's Handbook of Aeronautical Knowledge
- FAA Federal Aviation Regulations
- https://www.faa.gov/pilots/safety/pilotsafetybrochures/media/alcohol.pdf
- https://www.faa.gov/licenses_certificates/medical_certification/media/OTCMedicationsforPilots.pdf
- https://www.faasafety.gov/files/notices/2015/Sep/SE_Topic_15-09.pdf
- https://www.faa.gov/about/office_org/headquarters_offices/avs/offices/aam/ame/guide/pharm/
- https://www.skybrary.aero/index.php/The_Effects_of_Alcohol_and_Drugs_on_Pilot_Performance
- https://www.aopa.org/go-fly/medical-resources/health-conditions/substance-abuse/alcohol-and-drug-guidelines