BASICS FOR AIR TRAFFIC CONTROL – TITLE 14 CODE OF FEDERAL REGULATIONS (CFRs)

MODULE OVERVIEW

Purpose: The purpose of this module is to cover the rules and regulations that pilots and controllers must follow to be a part of the Air Traffic Control (ATC) system and the meaning of selected terms and definitions.

MODULE OUTLINE

Lesson: Introduction to Code of Federal Regulations (CFRs)

Purpose: The purpose of this lesson is to define the Code of Federal Regulations and certain significant terms used in the document.

Objectives:

- Define Title 14 Code of Federal Regulations (CFRs)
- Define basic terms associated with Title 14 CFRs

Topics:

- Code of Federal Regulations (CFRs)
- Terms and Definitions
- Knowledge Check
- Terms and Definitions (cont.)
- Word Meanings
- Knowledge Check
- Review/Summary

Activity – Title 14 CFR Terms and Definitions

Question and Answer Session – *Parking Lot*

Lesson: General Operating and Flight Rules

Purpose: The purpose of this lesson is to describe the content contained in the General Operating Rules and Flight Rules sections of the Title 14 Code of Federal Regulations.

Objective:

- Define Title 14 CFRs' general operating and flight rules

Topics:

- Title 14 CFR 91.1 through 91.25 Applicability
- Pilot Responsibility & Authority
- Careless or Reckless Operations
- Pre-Flight Action
- Operations Near Other Aircraft
- Visibility
- Right-of-Way Rules
- Knowledge Check

- Aircraft Speed
- Minimum Safe Altitudes (VFR)
- Knowledge Check
- Altimeter Settings at or Above 18,000 Feet
- Air Traffic Clearance Compliance
- IFR Cancellation
- Pilot Responsibilities
- Knowledge Check
- Operations in Airspace
  - Operations in Class G Airspace
  - Operations in Class E Airspace
  - Operations in Class C or D Airspace
- Complying with Clearances
  - Class C or D
  - Class B
  - Class A
- Part 101E
  - Features
  - Restrictions
- Part 107
- Knowledge Check
- Review/Summary

Question and Answer Session – *Parking Lot*

Exercise – General Operating and Flight Rules

Lesson: ATC Certifications

Purpose: The purpose of this lesson is to describe the requirements a person must meet to become a certified air traffic controller.

Objective:

- Identify requirements for achieving an ATC certification

Topics:

- ATC Certifications
  - Required Certification
  - Eligibility Requirements
  - Knowledge Requirements
  - Skill Requirements
- Knowledge Check
  - General Operating Rules
  - Performance of Duties
  - Alcohol or Drugs
  - Duration of Certificate
  - Retesting After Certificate Failure
  - Medical Requirements
- Knowledge Check
- Review/Summary

Question and Answer Session – *Parking Lot*

End-of-Module (EOM) Test

INTRODUCTION

LESSONS	■ Introduction to Code of Federal Regulations (CFRs) ■ General Operating and Flight Rules ■ ATC Certifications
TOTAL ESTIMATED RUN TIME	4 hrs. 02 mins.
MODULE CONTENT	■ Module Overview ■ Lesson: Introduction to Code of Federal Regulations (CFRs) ■ Activity – Title 14 CFR Terms and Definitions ■ Q&A Session – Parking Lot ■ Lesson – General Operating and Flight Rules ■ Q&A Session – Parking Lot ■ Exercise – General Operating and Flight Rules ■ Lesson: ATC Certifications ■ Q&A Session – Parking Lot ■ End-of-Module Test

FACILITATOR INSTRUCTIONS	DELIVERY METHOD
■ Instruct students to select ***Title 14 Code of Federal Regulations (CFRs)*** module link within Blackboard ■ Instruct students to read the module introduction and then wait quietly for additional instructions	Blackboard
	EST. RUN TIME
	2 mins.

Can you imagine what the sky would look like without rules? It would be like rush hour traffic with **NO** speed limits, stop signs, or lane markings! The rules for road traffic are state-regulated. The rules for the sky are contained in the Title 14 Code of Federal Regulations (CFRs).

Knowledge of the general operating and flight rules will help the controller understand what pilots are expected to do in various circumstances. These rules provide for standardization and order in Air Traffic Control (ATC).

The purpose of this module is to cover the rules and regulations that pilots and controllers must follow to be a part of the ATC system and the meaning of selected terms and definitions.

FACILITATOR INSTRUCTIONS	DELIVERY METHOD
■ **ENABLE *Introduction to Code of Federal Regulations (CFRs)*** lesson and ***Title 14 CFR Terms and Definitions*** activity in Blackboard ■ Instruct students to navigate to the ***Introduction to Code of Federal Regulations (CFRs)*** lesson in Blackboard ■ Instruct students to work individually through the lesson content ■ Upon completion of the lesson, instruct students to navigate to the ***Exercise and Activity*** folder ■ Instruct students to locate activity ***Title 14 CFR Terms and Definitions*** ■ Instruct students to work individually through the activity ■ Upon completion students should review previously introduced content or wait quietly until other students have completed	Blackboard and Activity **EST. RUN TIME** 15 mins.

INTRODUCTION TO CODE OF FEDERAL REGULATIONS (CFRs)

Purpose: The purpose of this lesson is to define the Title 14 Code of Federal Regulations and certain significant terms used in the document.

Objectives:

- Define Title 14 Code of Federal Regulations (CFRs)
- Define basic terms associated with Title 14 CFRs

References for this lesson are as follows:

- Title 14 Code of Federal Regulations (CFRs) 1, 65, 67, and 91
- FAA Order JO 7110.65, Air Traffic Control

Code of Federal Regulations (CFRs)

Title 14 of the CFRs is referred to as the Federal Aviation Regulations (FARs). FARs:

- Are issued by authority of the FAA Administrator
- Establish and provide rules and regulations for operation of aircraft within the United States
- Give pilots directions that promote the safety of flight
- Prescribe the action a pilot must take under various circumstances (Example: compliance with air traffic clearances)
- Apply to all aircraft operating in the United States, including foreign aircraft

FARs are arranged by:

- Part
- Subpart
- Section

Note: *All Title 14 CFRs/FARs are available online at http://rgl.faa.gov.*

All aviation regulations are covered under Title 14 of the CFRs; however, different titles within the CFRs regulate areas other than aviation.

Terms and Definitions

The following terms are used throughout the Title 14 CFRs.

	Administrator	The Federal Aviation Administrator or any person to whom he/she has delegated authority in the matter concerned.
	**Air Traffic**	Aircraft operating in the air or on an airport surface, exclusive of loading ramps and parking areas.
	**Air Traffic Clearance**	An authorization by air traffic control (ATC), for the purpose of preventing collision between known aircraft, for an aircraft to proceed under specified traffic conditions within controlled airspace.
	**Aircraft**	Device(s) used or intended to be used for flight in the air and, when used in ATC terminology, may include the flight crew.
	**Airplane**	An engine-driven, fixed-wing aircraft heavier than air that is supported in flight by the dynamic reaction of the air against its wings.
	**Airship**	An engine-driven, lighter-than-air aircraft that can be steered.
	**Glider**	A heavier-than-air aircraft that is supported in flight by the dynamic reaction of the air against its lifting surfaces and whose free flight does NOT depend principally on an engine.

Terms and Definitions

	**Balloon**	A lighter-than-air aircraft that is NOT engine driven and that sustains flight through the use of either gas buoyancy or an airborne heater.

Knowledge Check A

REVIEW what you have learned so far about CFRs. ANSWER the questions listed below.

1. Under whose authority are Title 14 CFRs/FARs issued? *(Select the correct answer.)*
   - ❑ DOT administrator
   - ❑ FAA manager
   - ❑ **FAA administrator**

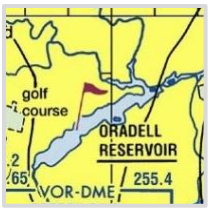
2. What is the term used to indicate aircraft operating in the air or on airport movement areas? *(Select the correct answer.)*
   - ❑ Air carriers
   - ❑ **Air traffic**
   - ❑ Air traffic control

3. What is authorization by ATC for the purpose of preventing collisions between known aircraft called? *(Select the correct answer.)*
   - ❑ ATC approval
   - ❑ Air traffic direction
   - ❑ **Air traffic clearance**

Terms and Definitions

	**Unmanned Aircraft (UA)**	Refers to a device used or intended to be used for flight that has NO onboard pilot. This device can be any type of airplane, helicopter, airship, or powered-lift aircraft. Unmanned free balloons, moored balloons, tethered aircraft, gliders, and unmanned rockets are NOT considered to be UA.
	**Unmanned Aircraft System (UAS)**	Refers to an unmanned aircraft and its associated elements related to safe operations, which may include control stations (ground-, ship-, or air-based), control links, support equipment, payloads, flight termination systems, and launch/recovery equipment. It consists of three elements: unmanned aircraft, control station, and data link.

Terms and Definitions

	**Small Unmanned Aircraft**	An unmanned aircraft weighing less than 55 pounds on takeoff, including everything that is on board or otherwise attached to the aircraft.
	**Helicopter**	A rotorcraft that, for its horizontal motion, depends principally on its engine-driven rotors.
	**Airport**	An area of land or water that is used or intended to be used for the landing and takeoff of aircraft and includes its buildings and facilities, if any.
	**Alternate Airport**	An airport at which an aircraft may land if a landing at the intended airport becomes inadvisable.
	**Air Traffic Control (ATC)**	A service operated by appropriate authority to promote the safe, orderly, and expeditious flow of air traffic.
	**Flight Level (FL)**	A level of constant atmospheric pressure related to a reference datum of 29.92 inches of mercury. Each is stated in three digits that represent hundreds of feet. For example, FL 250 represents a barometric altimeter indication of 25,000 feet; FL 255, an indication of 25,500 feet.
	**Reporting Point**	A geographical location in relation to which the position of an aircraft is reported.

Terms and Definitions

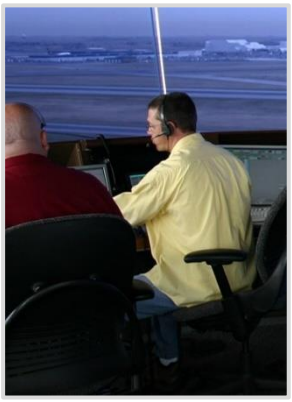
	**Positive Control**	Control of all air traffic within designated airspace by ATC.
	**Distance Measuring Equipment (DME)**	Equipment (airborne and ground) used to measure, in nautical miles, the slant range distance of an aircraft from the DME navigational aid (NAVAID).
	**Flight Plan**	Specified information, relating to the intended flight of an aircraft, that is filed orally or in writing with ATC.

Word Meanings

Approved separation	Approved separation is separation in accordance with the applicable minima in FAA Order JO 7110.65.

Miles	Miles are: ■ Nautical miles (NM), unless otherwise specified ■ Statute miles (SM) when used in conjunction with visibility

Time	Time, as used for ATC operational activities: ■ Coordinated Universal Time (UTC): the term “zulu” may be used ■ Change to the next minute is made at the minute plus 30 seconds • Except time checks given to nearest quarter minute



Knowledge Check B

REVIEW what you have learned so far about CFRs. ANSWER the questions listed below.

1. What is a level of constant atmospheric pressure related to a reference datum of 29.92 inches of mercury known as? *(Select the correct answer.)*
   - ❑ **Flight level**
   - ❑ Aircraft altitude
   - ❑ Mean Sea Level (MSL) altitude

2. What is the control of all air traffic within designated airspace by ATC referred to as? *(Select the correct answer.)*
   - ❑ Restricted control
   - ❑ Precision control
   - ❑ **Positive control**

Introduction to Code of Federal Regulations (CFRs) Summary

Title 14 Code of Federal Regulations is your rulebook, and your job is to play by the rules. An airplane and an aircraft aren't necessarily the same thing, and a balloon and an airship have some of the same qualities, but do you know the difference between them? Knowing these terms is a critical part of your job.

FACILITATOR INSTRUCTIONS	DELIVERY METHOD
■ **Note:** ***Title 14 CFR Terms and Definitions*** should have already been enabled in Blackboard, if not ensure it is enabled ■ Instruct students to navigate to the ***Exercises and Activities*** folder in Blackboard ■ Instruct students to locate student activity ***Title 14 CFR Terms and Definitions*** ■ The activity will be performed individually ■ Instruct students to answer each question ■ At the end of the activity, the activity will evaluate the students' performance ■ Suggest allowing opportunities to repeat the activity during periods of down time	Activity **EST. RUN TIME** 15 mins.

ACTIVITY: TITLE 14 CFR TERMS AND DEFINITIONS (ANSWER KEY)

Note: *The questions in the key and their distractors may appear in a different order than displayed here due to activity question randomization.*

Answers for question 1–7 come from this word bank:

Air traffic	*Air Traffic Control*	*Balloon*	*Unmanned Aircraft System*
Helicopter	*Airship*	*Airplane*	*Distance Measuring Equipment*
Glider	*Unmanned Aircraft*	*Aircraft*	*Small Unmanned Aircraft*

Question	Answer
1. Which term depends on engine-driven rotors for horizontal motion?	**Helicopter**
2. Which term means an engine-driven, lighter-than-air aircraft?	**Airship**
3. Which term encompasses all devices used for flight?	**Aircraft**
4. Which term means a lighter-than-air aircraft that is **NOT** engine driven?	**Balloon**
5. Which term refers to an aircraft that does **NOT** have a pilot on board in addition to all the elements associated with that aircraft?	**Unmanned Aircraft System**
6. Which term refers to an engine-driven, fixed-wing aircraft?	**Airplane**
7. Which term refers to a heavier-than-air aircraft that does **NOT** depend principally on an engine?	**Glider**

Answers for question 8–15 come from this word bank:

Air traffic	*Positive control*	*Air Traffic Control*	*Reporting point*
Administrator	*Instrument Flight Rules*	*Flight level*	*Airport*
Alternate airport	*Pilot in Command*	*Visual Flight Rules*	*Flight plan*
Distance Measuring Equipment			

Question	Answer
8. Which term refers to control of air traffic in designated airspace?	**Positive control**
9. Which term means a level of constant atmospheric pressure that relates to a reference datum of 29.92 inches of mercury?	**Flight level**
10. Which term encompasses aircraft operating in the air and on the airport surface?	**Air traffic**
11. Which term refers to the service of promoting the safe flow of air traffic?	**Air Traffic Control**
12. Which term refers to the person with authority over the Federal Aviation Administration?	**Administrator**
13. Which term refers to the rules for conducting flight under visual conditions?	**Visual Flight Rules**
14. Which term means a geographical location in relation to the position of an aircraft?	**Reporting point**
15. Which term refers to equipment used to measure the slant range distance between the aircraft and the navigational aid?	**Distance Measuring Equipment**

FACILITATOR INSTRUCTIONS	DELIVERY METHOD
■ Review content presented in ***Introduction to Code of Federal Regulations (CFRs)*** lesson ■ Navigate to the ***Parking Lot*** link within Blackboard and review any student questions ■ Address ***Parking Lot*** questions and facilitate a brief discussion of the lesson content	Facilitated Discussion **EST. RUN TIME** 15 mins.

FACILITATOR INSTRUCTIONS	DELIVERY METHOD
■ **ENABLE *General Operating and Flight Rules*** lesson in Blackboard ■ Instruct students to navigate to the ***General Operating and Flight Rules*** lesson in Blackboard ■ Instruct students to work individually through the lesson content ■ Upon completion of the lesson, students should review previously introduced content or wait quietly until other students have completed	Blackboard **EST. RUN TIME** 40 mins.

TITLE 14 CFR, PART 91: GENERAL OPERATING AND FLIGHT RULES

Purpose: The purpose of this lesson is to describe the content contained in the General Operating Rules and Flight Rules sections of the Title 14 Code of Federal Regulations (CFRs).

Objective:

- Define Title 14 CFRs' general operating and flight rules

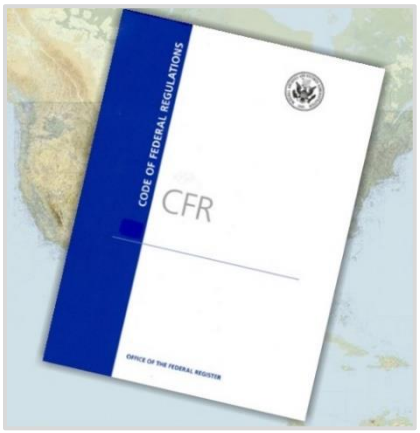
References for this lesson are as follows:

- Title 14 Code of Federal Regulations Part 91
- FAA Order JO 7110.65, Air Traffic Control

Title 14 CFR 91.1 through 91.25 Applicability

Title 14 CFR 91.1 through 91.25 govern all air traffic within the United States including the:

- Waters within 3 NM of the U.S. coast
- Airspace within 12 NM of the U.S. coast



Pilot Responsibility and Authority

The pilot in command of an aircraft:

- Is directly responsible for, and is the final authority as to, the operation of that aircraft
- In an in-flight emergency requiring immediate action, may deviate from any rule of this part to the extent required to meet that emergency
    - Each pilot in command who (though not deviating from a rule of this subpart) is given priority by ATC in an emergency, shall submit a detailed report of that emergency within 48 hours to the manager of that ATC facility, if requested by ATC

Careless or Reckless Operations

NO person may operate an aircraft in a careless or reckless manner so as to endanger the life or property of another.

Title 14 CFR 91.101 Applicability

Title 14 CFR 91.101 prescribes flight rules governing the operation of aircraft within:

- United States
- 12 NM from the U.S. coast

Pre-Flight Action

Each pilot in command shall, before beginning a flight, become familiar with all available information concerning that flight.

Pre-flight information required for:

Instrument Flight Rules (IFR) Flights/ Flights Not in the Vicinity of Airports	All Flights
■ Weather reports and forecasts ■ Fuel requirements ■ Alternatives available if the planned flight cannot be completed ■ Any known traffic delays of which the pilot in command has been advised by Air Traffic Control (ATC)	■ Runway lengths at airports of intended use ■ Takeoff and landing distance information including: • Takeoff and landing distance data from the approved Airplane or Rotorcraft Flight Manual • Other reliable information appropriate to the aircraft

Operations Near Other Aircraft

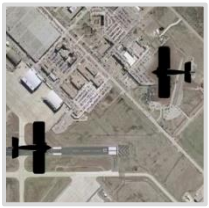
- **NO** person may operate an aircraft so close to another aircraft as to create a collision hazard
- **NO** person may operate an aircraft in formation flight except by arrangement with the pilot in command of each aircraft in the formation
- **NO** person may operate an aircraft carrying passengers for hire in formation flight

Visibility

When weather conditions permit, regardless of whether an operation is conducted under instrument flight rules or visual flight rules, vigilance shall be maintained by each person operating an aircraft so as to see and avoid other aircraft.

Right-of-Way Rules

Certain right-of-way rules apply when one or both aircraft are uncontrolled (VFR) in the different situations below.

	**In Distress**	Aircraft in distress have right-of-way over all other traffic.
	**Converging**	When aircraft of the same category are converging at approximately the same altitude, the aircraft to the other's ***right*** has the right-of-way. For aircraft of different categories, the following rules apply: ■ A balloon has the right-of-way over any other category ■ A glider has the right-of-way over an airship, powered parachute, airplane, or rotorcraft ■ An airship has the right-of-way over a powered parachute, airplane, or rotorcraft ■ An aircraft towing or refueling other aircraft has right-of-way over all engine-driven aircraft
	**Approaching Head-on**	When aircraft are approaching each other head-on, or nearly so, each pilot of each aircraft shall alter course to the ***right***.

	**Overtaking**	Each aircraft that is being overtaken has the right-of-way and each pilot of an overtaking aircraft shall alter course to the ***right*** to pass well clear.
	**Landing**	■ Aircraft, while on final approach to land or while landing, have the right-of-way over other aircraft in flight or operating on the surface *(**Note:** At controlled airports, the tower controller will provide the sequence)* ■ Approaching aircraft at lower altitude has right of way

Knowledge Check C

REVIEW what you have learned so far about CFRs. ANSWER the questions listed below.

1. Which aircraft operating within the United States are subject to Title 14 CFR/FAR Part 91? *(Select the correct answer.)*
   - ❑ Military only
   - ❑ Civilian
   - ❑ **All aircraft**

2. When may pilots of two different aircraft operate as a formation flight? *(Select all correct answers that apply.)*
   - ❑ Authorization is obtained from ATC
   - ❑ Flight visibility is at least 3 miles
   - ❑ **Prior arrangements are made**
   - ❑ **NO paying passengers are aboard**

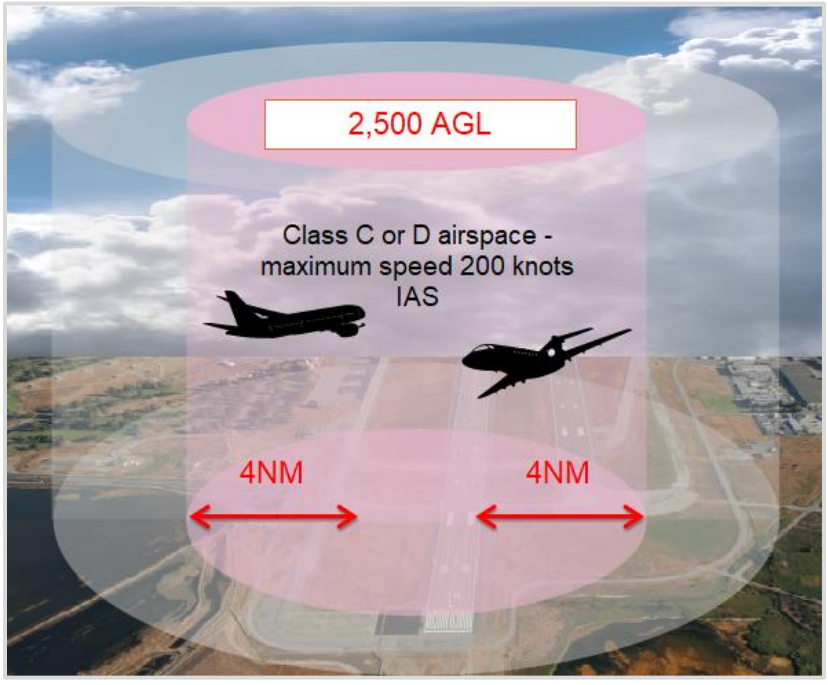
3. For approaching head-on aircraft, each pilot of each aircraft shall: *(Select the correct answer.)*
   - ❑ **Alter course to the right**
   - ❑ Alter course to the left
   - ❑ One will climb, one will descend

Aircraft Speed

Unless otherwise authorized, aircraft below 10,000 feet Mean Sea Level (MSL) must operate at a speed of **NOT** more than 250 knots Indicated Air Speed (IAS).

***Note**: IAS will be explained in a later lesson. Descending aircraft assigned a speed greater than 250 knots are expected to comply with this restriction without notifying ATC.*

Unless authorized or required by ATC, aircraft at or below 2,500 feet Above Ground Level (AGL) within 4 NM of the primary airport of a Class C or D airspace must operate at a speed of **NOT** more than 200 knots IAS.



NO person may operate an aircraft at more than 200 knots indicated air speed:

- Below Class B airspace
- In a VFR corridor designated through a Class B airspace

For aircraft with a minimum safe speed greater than maximum prescribed speed:

- Minimum safe speed will apply

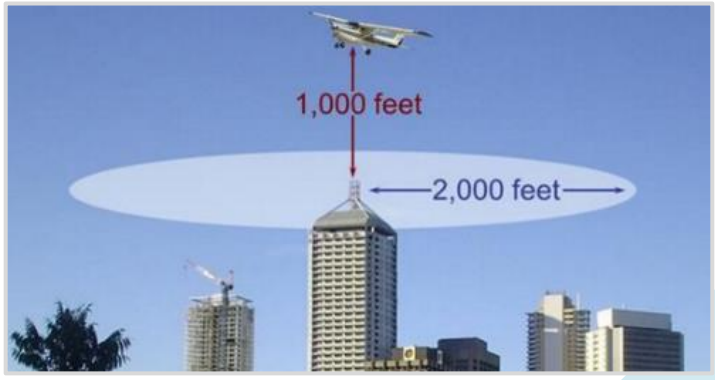
Minimum Safe Altitudes (VFR)

Power Unit Failure

Except for takeoff or landing, **NO** person may operate an aircraft below an altitude that, if a power unit fails, allows an emergency landing without undue hazard to persons or property on the surface

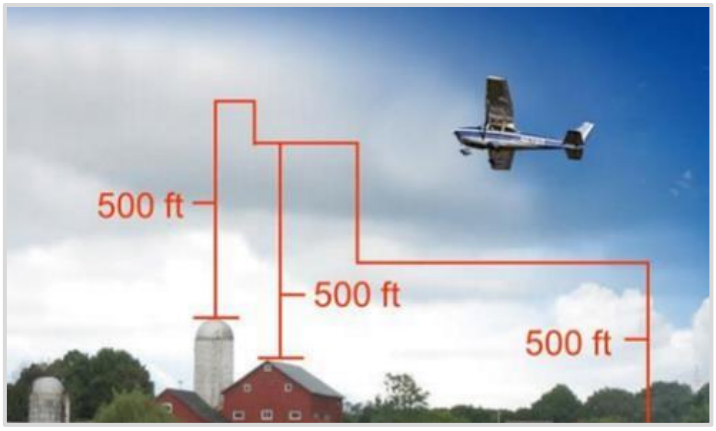
Over Congested Areas (VFR)

Except for takeoff or landing, over a city, town, settlement, or open air assembly of persons, below 1,000 feet above highest obstacle within horizontal radius of 2,000 feet of the aircraft surface.



Over Non-Congested Areas (VFR)

Except for takeoff or landing, an altitude of 500 feet above the surface, except over open water or sparsely populated areas. In those cases, aircraft may **NOT** be operated closer than 500 feet away from any person, vessel, vehicle, or structure.



Helicopters may be operated below minimum safe altitudes provided operation is:

- Conducted without hazard to persons or property on the surface
- In compliance with any routes or altitudes specifically prescribed for helicopters by the Administrator

Knowledge Check D

REVIEW what you have learned so far about CFRs. ANSWER the questions listed below.

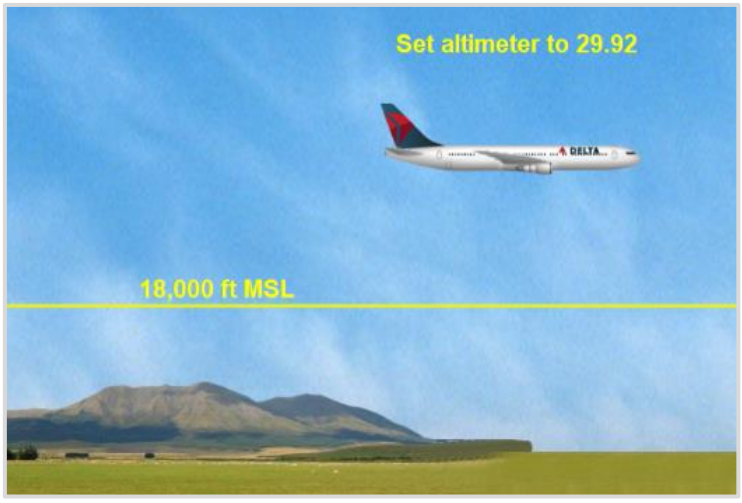
1. What is the maximum speed of VFR aircraft below Class B airspace? *(Select the correct answer.)*
   - ❑ 180 knots IAS
   - ❑ **200 knots IAS**
   - ❑ 300 knots IAS

2. What is the maximum speed for an aircraft in Class C or D airspace flying at less than 2,500 feet AGL and within 4 NM of the primary airport? *(Select the correct answer.)*
   - ❑ 156 knots
   - ❑ 250 knots
   - ❑ **200 knots**

3. What is the minimum safe altitude over congested areas? *(Select the correct answer.)*
   - ❑ **1,000 feet above the highest obstacle**
   - ❑ 1,200 feet above ground level
   - ❑ 2,000 feet above the lowest obstacle

Altimeter Settings at or Above 18,000 Feet

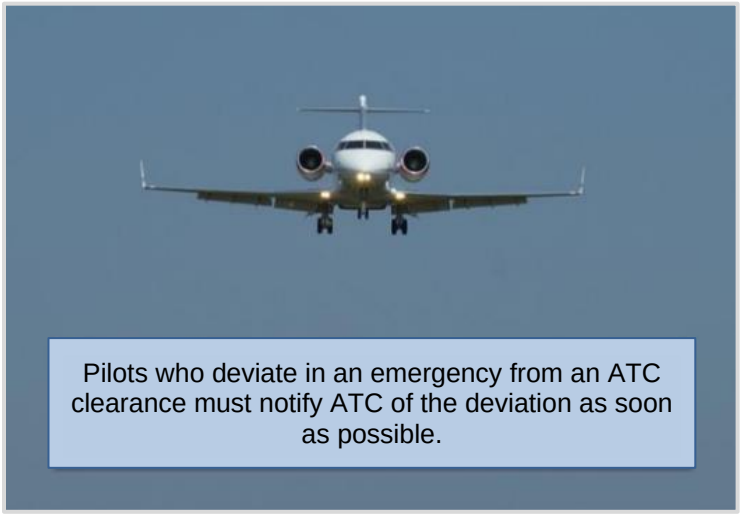
Each person operating an aircraft shall maintain the cruising altitude or flight level by reference to an altimeter. Below 18,000 MSL − current altimeter setting reported by a station along the route within 100 NM of the aircraft. At or above 18,000 feet MSL − altimeter set at 29.92.



Air Traffic Clearance Compliance

The pilot may **NOT** deviate from ATC clearance except:

- If an emergency exists
- If pilot obtains an amended clearance
- In response to a Traffic Alert and Collision Avoidance System (TCAS) Resolution Advisory (RA)



IFR Cancellation

Except in Class A airspace, a pilot may cancel an IFR flight plan if the operation is being conducted in VFR weather conditions.

Pilot Responsibilities

Each pilot in command who, in an emergency, or in response to a traffic alert and collision avoidance system resolution advisory, deviates from an ATC clearance or instruction shall notify ATC of that deviation as soon as possible.

Knowledge Check E

REVIEW what you have learned so far about CFRs. ANSWER the questions listed below.

1. What should the altimeter be set at in an aircraft maintaining FL 310? *(Select the correct answer.)*
   - ❑ **29.92**
   - ❑ 31.00
   - ❑ Altimeter setting within 100 NM of the aircraft

2. When may a pilot deviate from an ATC clearance? *(Select the correct answer.)*
   - ❑ At the pilot's discretion
   - ❑ Under **NO** condition
   - ❑ **In an emergency**

3. When should a pilot who deviates from an ATC clearance notify ATC of that deviation? *(Select the correct answer.)*
   - ❑ **As soon as possible**
   - ❑ The following day
   - ❑ The following week

Operations in Class G Airspace

Pilots in command (unless otherwise authorized) who are operating an aircraft on or in the vicinity of an airport in Class G airspace must comply with certain requirements.

Requirements for airports:

Direction of turns at airports without an operational control tower:

- Make all turns to the ***left*** unless approved markings or light signals indicate differently
- Helicopters must avoid flow of fixed-wing aircraft

Two-way communications must be maintained at airports with operating control towers:

- By aircraft operating to, from, through, or on the airport
- Prior to 4 NM from the airport
- Up to and including 2,500 feet Above Ground Level

Note: *An example of a control tower in Class G airspace would be a temporary tower that is operating solely for the purpose of regulating the flow of traffic involved in firefighting operations or, during an airshow, at a normally uncontrolled airport.* ***NO*** *Class D airspace would exist because airspace designations can only be established through a lengthy rulemaking procedure and published. The airspace around the airport would therefore remain as Class G even though there is a tower established for a short period of time*

Operations in Class E Airspace

Unless otherwise authorized, pilots operating on or in the vicinity of an airport in Class E airspace must comply with certain requirements.

Traffic Patterns	Pilots must adhere to any traffic patterns established for that specific airport.
ATC Communication	Two-way communication at airports with control towers must be established and maintained: ■ By aircraft operating from the airport ■ By aircraft operating to the airport or through the airspace prior to 4 NM from the airport ■ For all aircraft up to and including 2,500 feet AGL

Operations in Class C or D Airspace

NO person may operate an aircraft in Class C or D airspace unless two-way communications are maintained with the facility providing ATC services. The following rules apply in Class C or D airspace.

Minimum Altitudes	Pilots flying in Class C or D airspace must abide by the minimum altitudes below: ■ Large or turbine-powered aircraft • Enter traffic pattern at least 1,500 feet above the airport elevation • Maintain 1,500 feet above airport elevation until further descent is required for a safe landing
Landing	Pilots in command landing at an airport within Class C or D airspace shall circle the airport to the left unless otherwise instructed by the tower. If operating a helicopter, avoid the flow of fixed-winged aircraft.
Departure Procedures	When departing a Class C or D surface area, pilots shall comply with published procedures for that airport. If flying a large or turbine-powered aircraft, climb to 1,500 AGL as rapidly as practicable.
Noise Abatement	Where a formal runway use program has been established by the FAA, each pilot of a large or turbine-powered airplane assigned a noise abatement runway by ATC must use that runway. However, consistent with the final authority of the pilot in command concerning the safe operation of the aircraft, ATC may assign a different runway if requested by the pilot in the interest of safety.

Complying With Clearances

Class C or D Operations	At an airport with an operating control tower, **NO** person may operate an aircraft without an appropriate clearance, such as taxiing, taking off, and landing. Different classes of airspace carry different requirements for clearance compliance.
Class B Operations	**NO** person may operate an aircraft within Class B airspace without: ■ ATC clearance ■ Two-way radio communication ■ Proper aircraft navigational equipment ■ Transponder (4096) with Mode C ■ ADS-B transponder
Class A Operations	**NO** person may operate an aircraft within Class A airspace without: ■ IFR clearance ■ An IFR rating ■ Two-way radio communication ■ IFR flight equipment ■ Transponder (4096) with Mode C ■ ADS-B transponder

Part 101E Unmanned Aircraft Systems

ATC services, including separation, are **NOT** provided to Part 101E (hobbyist) aircraft.

Part 101E operators are required to notify the airport and air traffic control tower (ATCT) when operating within 5 statute miles of the airport.

- Tower can only 'Acknowledge' the call, a.k.a. "Thanks For Calling"
- Tower cannot 'Approve' the operation as this would imply that the tower is waiving requirements that are solely the Part 101E operator's responsibility
- Tower can 'Deny' the operation for safety and advise the UA operator as to why

Features

- Aircraft is flown strictly for hobby or recreational use
- Aircraft is limited to **NOT** more than 55 pounds

Restrictions

Part 101E does **NOT** place any altitude restriction on modelers; however, AC 91-57A (Model Aircraft Operating Standards) recommends operators stay at or below 400 feet AGL.

Note: *The FAA does not advertise facilities' operational phone numbers.*

Part 107 Unmanned Aircraft Systems

ATC services and separation are not provided to Part 107 operators.

Proponents of **small Unmanned Aircraft Systems** (sUASs) are required to receive authorization to operate in Class B, C, D, and E surface area prior to operating.

- All requests are to be handled at headquarters via the FAA website (www.FAA.gov/UAS)
- If a facility is contacted by a Part 107 operator, send them to the FAA website for information and to fill out an authorization request

Knowledge Check F

REVIEW what you have learned so far about CFRs. ANSWER the questions listed below.

1. Which direction should aircraft always turn to line up for runways in Class G airspace at airports without operational control towers? *(Select the correct answer.)*
   - ❑ **Left**
   - ❑ Right
   - ❑ 180°

2. Which rules apply at airports in Class C or D airspace that have designated runway usage for a noise abatement program? *(Select all correct answers that apply.)*
   - ❑ All aircraft must use runways designated for noise abatement
   - ❑ **Large aircraft must use runways designated for noise abatement**
   - ❑ Turboprop aircraft must use runways designated for noise abatement
   - ❑ **Pilot may request another runway in the interest of safety**

3. In which class of airspace are pilots **NOT** allowed to operate unless they have an IFR rating? *(Select the correct answer.)*
   - ❑ **Class A**
   - ❑ Class B
   - ❑ Class C or D

General Operating and Flight Rules Summary

Mr. Brown calls and wants to know if he can fly his drone in a neighborhood adjacent to the airport. Do you know the rules that apply to this? It is important that you learn and know the general operating rules and flight rules contained within Title 14 CFR. You must uphold and enforce these rules every day on the job.

FACILITATOR INSTRUCTIONS	DELIVERY METHOD
■ Review content presented in ***General Operating and Flight Rules*** lesson ■ Navigate to the ***Parking Lot*** link within Blackboard and review any student questions ■ Address ***Parking Lot*** questions and facilitate a brief discussion of the lesson content	Facilitated Discussion **EST. RUN TIME** 15 mins.

FACILITATOR INSTRUCTIONS	DELIVERY METHOD
■ Instruct students to locate student exercise ***General Operating and Flight Rules*** in the printed ***Student Guide*** ■ The exercise is a review of the Title 14 CFRs General Operating and Flight Rules ■ The exercise may be performed individually or in teams ■ Instruct students to answer each question and if needed review lesson content to locate correct responses ■ At the end of the exercise, answers will be evaluated and students will evaluate their performance	Exercise **EST. RUN TIME** 40 mins.

EXERCISE: GENERAL OPERATING AND FLIGHT RULES

Purpose

This exercise promotes interaction and provides a review of General Operating and Flight Rules.

Directions

Read each question and enter your answer. If needed, look back through the lesson content to locate the answers. Your instructor may choose to make this a team or an individual exercise.

Detailed Facilitator Instructions: *This exercise may be completed in teams or with students participating individually. This exercise is a review of the Title 14 CFRs General Operating and Flight Rules. Instruct students to answer each question and if needed review lesson content to locate correct responses.*

QUESTION	ANSWER
1. Who is directly responsible and the final authority for operation of an aircraft?	**Pilot in command**
2. When may the pilot in command deviate from Title 14 CFR, Part 91?	**An emergency requiring immediate actions, a TCAS resolution, or received an amended clearance**
3. What is the right-of-way rule for an aircraft in distress?	**Right-of-way over all other traffic**
4. Describe the right-of-way rule for aircraft approaching “head-on.”	**Each pilot gives way to the right**

QUESTION	ANSWER
5. What is the maximum speed (unless authorized) for an aircraft below 10,000 feet MSL?	**250 knots IAS**
6. What is the minimum safe altitude for an aircraft over a congested area?	**1,000 feet above highest obstacle within 2,000 feet horizontal**
7. What should an altimeter be set at for an aircraft at FL 190?	**29.92**
8. When may a pilot in command cancel IFR?	**If operating in VFR conditions outside of Class A airspace**
9. Under what conditions may two aircraft fly in formation?	**Prior arrangements are made and NO paying passengers are aboard**
10. When may an aircraft operating at an airport with a noise-abatement-designated runway elect a different runway?	**In the interest of safety**
11. Pilots flying large or turbine-powered aircraft in Class C or D airspace should enter the traffic pattern at what altitude?	**At least 1,500 feet AGL**
12. When should a pilot who receives priority handling from ATC due to an emergency submit a written report?	**Within 48 hours upon request**
13. What is the maximum speed for an aircraft in Class C or D airspace flying at less than 2,500 feet AGL and within 4 NM of the primary airport?	**200 knots IAS**
14. What altimeter setting should an aircraft be using at 8,000 feet?	**The current setting obtained from a station along the route within 100 NM of the aircraft**
15. Unless otherwise indicated, which direction are all turns made in a traffic pattern?	**All turns are made to the left**
16. What is the maximum speed of VFR aircraft below Class B airspace?	**200 knots IAS**
17. Title 14 CFRs govern aircraft operating in the airspace within how many miles of the U.S. coast?	**12 NM**
18. Title 14 CFRs govern aircraft operating on the waters within how many miles of the U.S. coast?	**3 NM**
19. What is the right-of-way rule for converging aircraft?	**Aircraft to the right has the right-of-way**
20. What is the right-of-way rule for overtaking aircraft?	**Aircraft being overtaken has the right-of-way**

FACILITATOR INSTRUCTIONS	DELIVERY METHOD
■ **ENABLE *ATC Certifications*** lesson in Blackboard ■ Instruct students to navigate to the ***ATC Certifications*** lesson in Blackboard ■ Instruct students to work individually through the lesson content ■ Upon completion of the lesson, students should review previously introduced content or wait quietly until other students have completed	Blackboard **EST. RUN TIME** 20 mins.

ATC CERTIFICATIONS

Purpose: The purpose of this lesson is to describe the requirements a person must meet to become a certified air traffic controller.

Objective:

- Identify requirements for achieving an ATC certification

References for this lesson are as follows:

- Title 14 Code of Federal Regulations (CFRs), Parts 1, 65, 67, and 91

Required Certifications

NO person may act as an air traffic control tower operator at an air traffic control tower in connection with civil aircraft unless he or she:

- Holds an FAA Credential with a tower rating or an air traffic control tower operator certificate
- Holds a facility rating for that control tower or has qualified for the operating position at which he or she acts and is under the supervision of the holder of a facility rating for that control tower

Requirements

Applicants desiring to achieve an ATC tower certification must meet the following eligibility, knowledge, and skill requirements.

Eligibility

To be eligible for an air traffic control tower operator certificate, a person must:

- Be at least 18 years of age
- Be of good moral character
- Be able to read, write, and understand the English language and speak it without accent or impediment of speech that would interfere with two-way radio conversation
- Be able to meet medical requirements, as specified in Title 14 CFR Part 67, and FAA Order 3930.3

Knowledge

Applicants for an ATC tower operator's certificate must pass a written test on:

- Flight rules in Title 14 CFR in Part 91
- En route traffic control procedures
- Airport traffic control procedures
- Communications operating procedures
- Flight assistance service
- Air navigation and aids to air navigation
- Aviation weather

Skill

You may **NOT** act as an air traffic control tower operator at any operating position unless you have passed a practical test on:

- Control tower equipment and its use
- Weather-reporting procedures and use of reports
- Notices to Air Missions and use of the Aeronautical Information Manual (AIM)
- Use of operational forms
- Performance of non-control operational functions
- Performance of control duties applicable to the operating position on which you are testing

Knowledge Check G

REVIEW what you have learned so far about ATC certification. ANSWER the questions listed below.

1. Which of the following are required before a person can act as an air traffic control tower operator? *(Select all correct answers that apply.)*
   - ❑ **Holds a facility rating for that control tower issued under this subpart or has qualified for the operating position at which he or she acts and is under the supervision of the holder of a facility rating for that control tower**
   - ❑ **Qualified for the operating position at which they act**
   - ❑ **Holds a valid FAA Credential with a Tower rating or a valid Control Tower Operator Certificate**

2. Which of the following skills are required for air traffic control tower operator certification? *(Select all correct answers that apply.)*
   - ❑ Flight assistance service
   - ❑ **Weather-reporting procedures and use of reports**
   - ❑ En route traffic control procedures
   - ❑ **Control tower equipment and its use**

General Operating Rules

Personnel holding an air traffic control tower operator's certificate:

Shall

- Keep it readily available when performing duties in the tower
- Present the certificate or medical certificate for inspection upon request of authorized officials
- Upon reasonable request of the Administrator, cooperate fully in any test requested of them

May Not

- Perform duties during any physical deficiency that will make him/her unable to meet the physical requirements for his/her current medical certificate
- Control air traffic with equipment found to be inadequate

Performance of Duties

With Certificate
An air traffic control tower operator shall perform his/her duties in accordance with the limitations on his/her certificate and the procedures and practices prescribed in air traffic control manuals of the FAA, to provide for the safe, orderly, and expeditious flow of air traffic.

With Facility Rating
An operator with a facility rating may control traffic at any operating position at the control tower at which he/she holds a facility rating.

Without Facility Rating
An operator who does **NOT** hold a facility rating for a particular control tower may act at each operating position for which he/she has qualified, under the supervision of an operator holding a facility rating for that control tower.

Alcohol and Drugs

A conviction for the violation of any federal or state statute relating to the growing, processing, manufacture, sale, distribution, possession, transportation, or importation of narcotic drugs, marijuana, or depressant or stimulant drugs or substances is grounds for:

Application Denial
Denial of an application for any certificate or rating for a period of up to 1 year after the date of final conviction.

Certificate Revocation
Suspension or revocation of a control tower operator's certificate.

No air traffic control specialist may perform air traffic control functions or directly supervise personnel performing ATC functions within 8 hours after partaking in intoxicants.

Duration of Certificate

A certificate or rating issued under Title 14 CFR, Part 65 is effective until it is:

- Surrendered
- Suspended
- Revoked

Retesting After Certificate Failure

Retesting After Failure
An applicant for a written, oral, or practical test for a certificate and rating, or for an additional rating under this part, may apply for retesting —

(a) After 30 days after the date the applicant failed the test; or
(b) Before the 30 days have expired if the applicant presents a signed statement from an airman holding the certificate and rating sought by the applicant, certifying that the airman has given the applicant additional instruction in each of the subjects failed and that the airman considers the applicant ready for retesting.

Medical Requirements

Employees engaged in the actual control of air traffic must meet and retain the medical requirements, as specified by Title 14 CFR, Part 67 and FAA Order 3930.3.

Medical Examinations
Required medical examinations shall be performed by flight surgeons or designated aviation medical examiners.

Frequency
ATC specialists shall be scheduled by facility managers for medical examinations as follows:

Age	Terminal / Center	Flight Service
39 and below	2 years	3 years
40 and above	1 year	2 years

Knowledge Check H

REVIEW what you have learned so far about ATC certification. ANSWER the questions listed below.

1. An air traffic control tower operator must perform his/her duties to provide for the safe, orderly, and expeditious flow of air traffic in accordance with _____. *(Select the correct answer.)*
   - ❑ His/her certificate and request of authorized officials
   - ❑ The control duties applicable to the position
   - ❑ The limitations on his/her certificate with an approved medical certificate
   - ❑ **The limitations on his/her certificate and the procedures and practices prescribed in FAA ATC manuals**

2. Which of the following consequences could a controller face if convicted for any federal or state statute relating to substance abuse? *(Select the correct answer.)*
   - ❑ Revocation of ATC operator's certificate
   - ❑ Denial of an application for any certificate or rating for up to 1 year
   - ❑ Suspension of ATC operator's certificate
   - ❑ **All of the above**

ATC Certifications Summary

Air traffic control operators are in an elite group of FAA professionals that ensure safety and efficiency for millions of pilots and passengers each day. Since this profession allows no room for error, becoming an air traffic control specialist is demanding. In order to become a certified ATC professional, you must meet FAA requirements and perform your duties in accordance with the certificate.

SUMMARY

This purpose of this module was to identify the rules and regulations that pilots and controllers must follow to be a part of the ATC system and the meaning of selected terms and definitions

In accordance with Title 14 Code of Federal Regulations 1, 65, 67, and 91; and FAA Order JO 7110.65, Air Traffic Control; you should now be able to:

- Define Title 14 CFRs
- Define basic terms associated with Title 14 CFRs
- Define Title 14 CFRs' general operating and flight rules
- Identify requirements for achieving an ATC certification

FACILITATOR INSTRUCTIONS	DELIVERY METHOD
■ Navigate to the ***Parking Lot*** link within Blackboard and review any student questions ■ Address ***Parking Lot*** questions and facilitate a brief discussion of the lesson content ■ Instruct students to prepare for the End-of-Module test by putting away their Student Guides	Facilitated Discussion **EST. RUN TIME** 25 mins.

FACILITATOR INSTRUCTIONS	DELIVERY METHOD

■ **ENABLE *Title 14 Code of Federal Regulations (CFRs) End-of-Module Test*** link in Blackboard
■ Instruct students:
  ○ Clear desks
  ○ Do not write anything during or after the test
  ○ Navigate to the ***Title 14 Code of Federal Regulations (CFRs) End-of-Module Test*** link in Blackboard
  ○ Once they are satisfied with their responses, click “Save and Submit;” do not click “OK” to review results until directed to do so
  ○ Choose “Cancel” if they receive a warning message that the test has unanswered questions; choosing OK will submit the test and not allow them to go back and answer the questions
  ○ Leave the room after submitting the test and return at the “Be Back” time
■ ***Note:*** *This test is scored but not graded*
■ During test, monitor students to ensure a secure testing environment
■ Identify the most commonly missed questions by reviewing student statistics in Blackboard
■ Instruct students to click “View Results” when ready to review commonly missed questions
■ Review commonly missed questions with students
	Blackboard Assessment
	EST. RUN TIME
	15 mins.

END-OF-MODULE TEST (ANSWER KEY)

Note: *Test questions in Blackboard are presented to the students in random order. Please be aware the test key question order will not match the student version.*

1. Which of the following is **NOT** found under Title 14 CFR? *(Select the correct answer.)*
   - ❑ **Curriculum required for ATC certification**
   - ❑ Actions a pilot must take under various circumstances
   - ❑ Directions to pilots to promote the safety of flight
   - ❑ Rules and regulations for operating aircraft within the United States

   Reference(s): Title 14 CFR

2. Specified information relating to the intended flight of an aircraft that is filed orally, in writing, or by computer with air traffic control is known as _____. *(Select the correct answer.)*
   - ❑ **Flight plan**
   - ❑ Air traffic clearance
   - ❑ Positive control
   - ❑ Pilot-in-command

   Reference(s): JO 7110.65, Pilot/Controller Glossary; Title 14 CFR 1

3. What is an authorization by ATC for the purpose of preventing collision between known aircraft and for an aircraft to proceed under specified traffic conditions within controlled airspace? *(Select the correct answer.)*
   - ❑ **Air traffic clearance**
   - ❑ Approved separation
   - ❑ Flight plan
   - ❑ DME

   Reference(s): JO 7110.65, Pilot/Controller Glossary; Title 14 CFR 1

4. Which of the following right-of-way rules is **NOT** correct? *(Select the correct answer.)*
   - ❑ **Converging aircraft - aircraft on the left has right-of-way**
   - ❑ Overtaking - aircraft being overtaken has right-of-way
   - ❑ Head-on - both aircraft give way to the right
   - ❑ Landing - aircraft on final approach has right-of-way

   Reference(s): Title 14 CFR 91.113

5. What is the maximum speed authorized by Title 14 CFR for aircraft below 10,000 feet MSL? *(Select the correct answer.)*
   - ❑ **250 knots**
   - ❑ 200 knots
   - ❑ 180 knots
   - ❑ 150 knots

   Reference(s): Title 14 CFR 91.117

6. What is the maximum airspeed when traveling in a VFR corridor through Class B airspace? *(Select the correct answer.)*
   - ❑ **200 knots**
   - ❑ 180 knots
   - ❑ 150 knots
   - ❑ 250 knots

   Reference(s): Title 14 CFR 91.117

7. What requirements must a controller have to hold an air traffic control tower operator certificate? *(Select all that apply.)*
   - ❑ Be at least 17 years of age
   - ❑ **Be of good moral character**
   - ❑ **Be able to read, write, and understand the English language**
   - ❑ **Be able to meet medical requirements, as specified in Title 14 CFR Part 67**

   Reference(s): Title 14 CFR 65.31