

**CFI Bootcamp**   
Flight Instructor Training

# Checkride Quick Study Guide

-The New Industry Standard -  
Miami Beach, Florida



A practical Study Guide to the  
problem areas on the CFI Checkride.

CFI students at CFI Bootcamp and everywhere else want to know what are the problem areas or emphasis areas on a checkride (Practical Test). At CFI Bootcamp we do lots of initial CFIs and have compiled problem areas we find students struggle with.

This new training aid was built to help you tackle these areas by giving you comprehensive solutions to the problem areas. The guide dives into the FARs (Regulations) because these are difficult for people to get their head around. There are so many and some that don't even apply to an airplane. This study guide will help you with the regulations, focus your attention on the most important ones and then using our flow charts make understanding how to navigate them much clearer.

We also hear a lot about your pain when it comes to the FOI. So, we responded by giving you our FOI chapter summaries that boil down each chapter to the essential things to know. We also tell you what you need to memorize and help drill that into your memory with flash cards that you can step through in this guide.

At the end of the study guide we address the most important things to do a few days before the checkride. It focuses the time you have remaining to the most likely areas that are tested at a high level.

So, please go through this study guide and leave time to really take it in and understand it. If you are still struggling you can get with your local CFI or book time with one of our CFIs here at CFI Bootcamp for one to one online sessions. You can find out more about that and all of our other products at [cfibootcamp.com](http://cfibootcamp.com).

- Mike Shiflett - Director of Training - May 2019 Miami Beach, FL

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These are the Problem Areas we find most often on practical tests

- Risk Management** Understand how to use the 5P model for single pilot resource management and how the 3P model drives the use of the PAVE, CARE and TEAM checklists.
- Handbooks** Make sure you are using the definitions like for runway incursion avoidance from the handbook. Reference the chapter and page of the handbook in our lesson plans for each bullet/main topic

Category and Class Definitions as related to a pilot certificate

- Category** Airplane, Rotorcraft, Glider, Lighter than Air, Powered Lift etc.
- Class** For airplanes: single engine land, single engine sea, multi engine land, multi engine sea.
- Rotorcraft** Helicopter, Gyroplane.
- Glider** None.
- Lighter than air  
Classes** Balloon, Airship.
- Powered lift** None

Technical Subject Areas

- Aerodynamics** Make sure you know how to teach aerodynamics lessons in the right order. Use our new lesson plans for that.
- Flight Controls** Use the PHAK chapter 6 and read the entire chapter including the section that address pulleys and bell cranks.
- Systems** Use the descriptions in the system part of the POH. Stay consistent on the words used - aligned with the handbook.
- Create an Index** Index the PTS and ACS to the FAR, AIM, Handbooks etc. After each element aligned with a FAA handbook, FAR or Advisory Circular

**3P Model** - Perceive Hazards, Process - to evaluate level of Risk, Perform - Implement Risk Management

<b>Perceive</b>	PAVE Check list - This part of the 3P model deals with understanding and mitigating risk BEFORE flight.
<b>Process</b>	DECIDE model or CARE Checklist - DECIDE MODEL - Detect that action is necessary, Estimate the significance of the action, and mitigating risk BEFORE flight. Choose a desirable outcome, Identify actions needed in order to achieve the chose option, Do the necessary action to achieve change, Evaluate the effects of the action. CARE Checklist is below.
<b>Perform</b>	TEAM - Transfer - Should this risk decision be transferred to someone else? A&P etc.

### CARE CHECKLIST

<b>Consequences</b>	Think through possible outcomes of each hazard and determine the level of risk involved.
<b>Alternatives</b>	Develop a mental list of alternatives.
<b>Reality</b>	Acknowledge reality and avoid wishful thinking.
<b>External Pressures</b>	Be mindful of external pressures.

### TEAM CHECKLIST

<b>Transfer</b>	Can you transfer responding to the risk to another crew member.
<b>Eliminate</b>	Is there a way to eliminate the hazard?
<b>Accept</b>	Do the benefits of accepting risk outweighs the dangers.
<b>Mitigate</b>	What can you do to mitigate the risk.

### Single Pilot Resource Management (SRM)

Uses the 5P approach - Goal is not to memorize another aviation mnemonic - add to the end of your checklist for key decision points during flight.

<b>Plan</b>	Basic elements of cross-country flight planning, weather, route, fuel, current publications
<b>Plane</b>	Pilot should be proficient using all installed equipment, performance characteristics and limitation and aircraft systems and instrument indications to detect any abnormal indications ASAP.
<b>Pilot</b>	IMSAFE.
<b>Passengers</b>	Who is doing what. Passengers can distract and also help.
<b>Programming</b>	Applies to both panel mounted and hand-held equipment. Can create an easier flight if done ahead of time or can create a serious distraction from flight duties. When is the right time to program and when should it not be attempted for each phase of flight.

### Airworthiness - Regulations that address airworthiness:

- 91.405** Maintenance required - Owner or operator must insure inspections are done and in the logbooks. Requires inoperative equipment to be repaired, replaced, removed or inspected at the next required inspection.
- 91.407** Operation after maintenance, preventive maintenance, rebuilding or alteration - Private pilot minimum must fly the airplane and then logs the flight in the aircraft records.
- 91.409** Inspections - Annual and 100 hour
- 91.411** Altimeter system and altitude reporting - 24 cal mos. - IFR only
- 91.413** Transponder tests and inspections - 24 cal mos.
- 91.417** Maintenance records - Includes how things must be recorded i.e. ADs Current status of each, method of compliance, the AD number and if recurring and when it is due again.

### AVIATED CHECKLIST

Use this list to help you identify what needs to be found in the airplanes logbooks and AD compliance records to be airworthy.

Annual	12 Cal Months - 91.409
VOR	IFR ONLY - 30 days - 91.171
100 Hour	Each 100 Hours (NOT USUALLY HOBBS) MUST LOOK AT Must be within 100 hours from today
Altimeter System	IFR ONLY - 24 Cal Months - 91.411 TACH - 91.409
Transponder	24 Cal Months - 91.413
ELT	Inspection 12 Cal Months - 91.207(d)
ELT	Battery REPLACEMENT - 1 hour cumulative use, 50% useful life, as indicated on the battery - 91.207
D (Ads)	Airworthiness directives (one time and recurring) Compliance record - 91.417

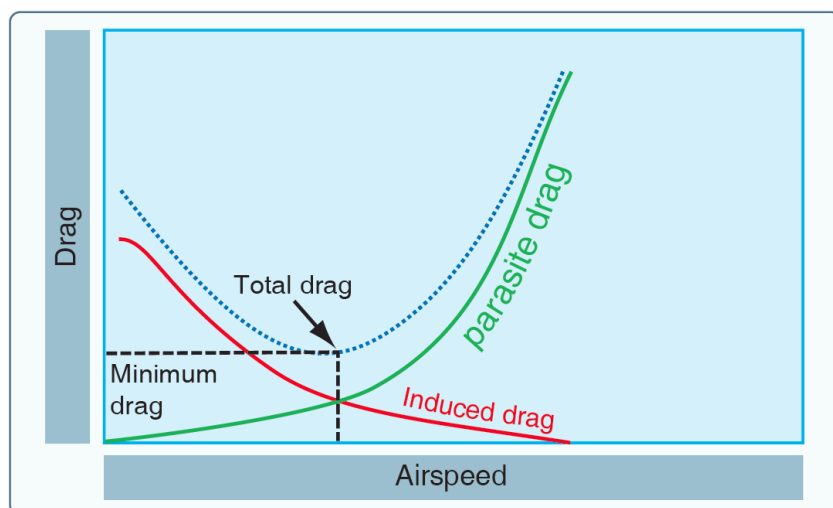
## Teaching Aerodynamics (The Order of teaching this subject)

## Lift

- Have to generate enough to overcome weight.
- Newton's third law and Bernoulli's principle.
- Show what the relative wind is.
- Show how the path stretches as the AOA increases to deepen the area of low pressure on top of the wing.
- Show the lift equation and point out that we can control lift by basically Velocity and AOA ( $C_L$ ). We can't control density, or surface area. As speed slows to keep the same lift AOA ( $C_L$ ) has to increase.
- Show critical angle and explain. Explain that we can get lift only so far with AOA before aerodynamic stall.

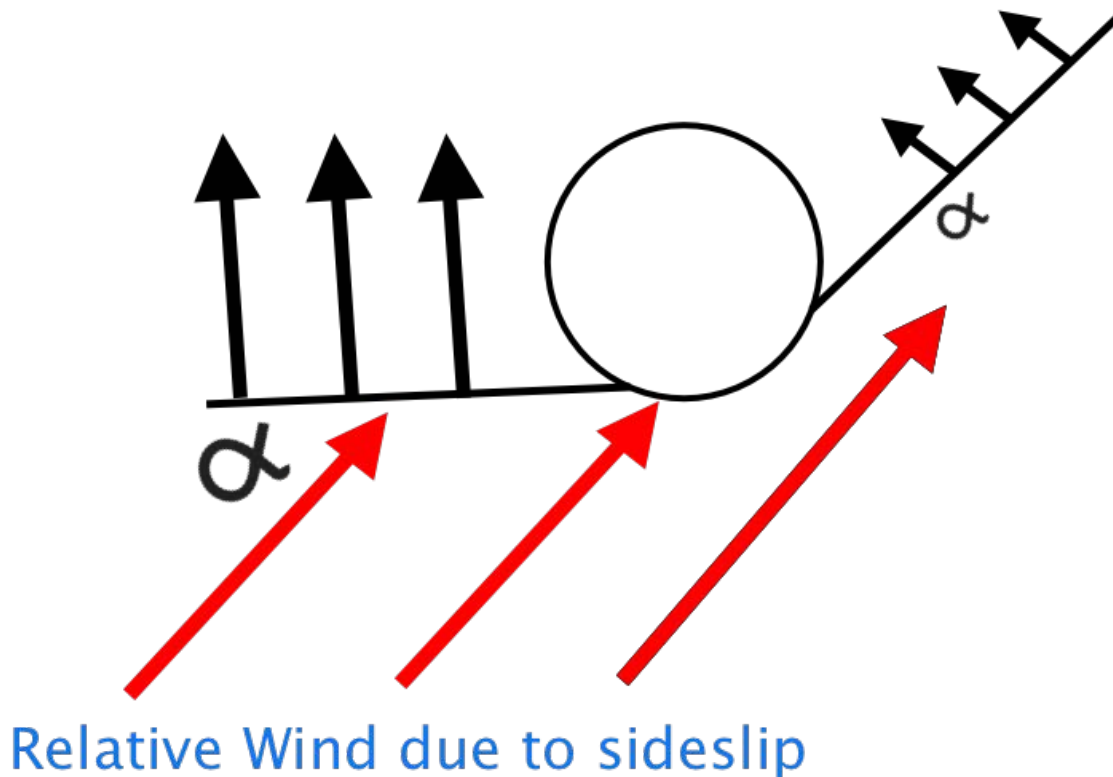
## Drag

- Because there is an atmosphere and air has mass we will have drag when we try to move.
- We need to push air out of the way so that we can occupy the space.
- That takes energy i.e. thrust. The faster we go the more air we encounter so drag increases.
- Show drag curve for parasite drag.
- Induced drag is caused by the lift vector being directed backward during high angles of attack. It is also a function of the wingtip vortice creation. It takes energy to create the vortice therefore this comes from the airplanes kinetic energy which results in drag.
- Show induced drag on the drag curve.
- Add the two curves together and show total drag. Point out the speed for the least drag.
- Because drag requires thrust to overcome you need more thrust to go faster due to parasite drag and you need more thrust to go slower due to induced drag. If you use all available thrust you can't climb. Anywhere there is more available thrust than drag you can climb.



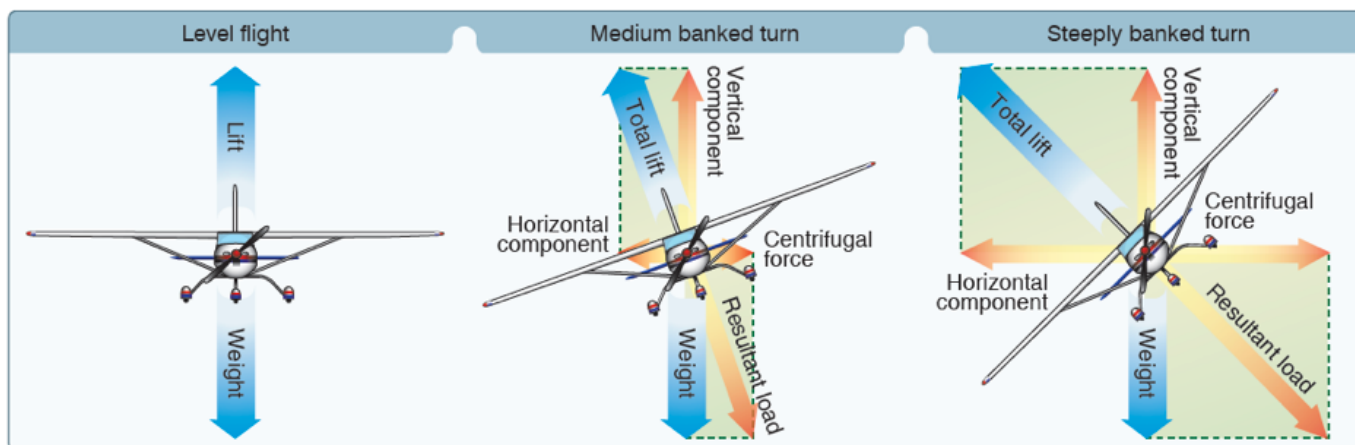
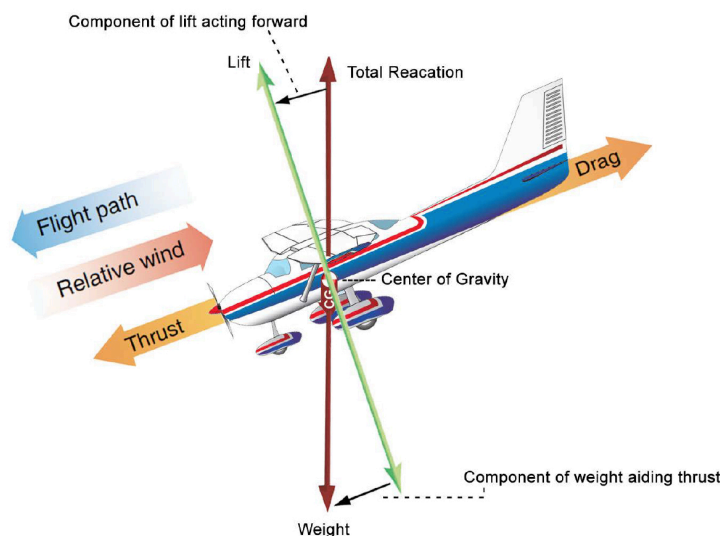
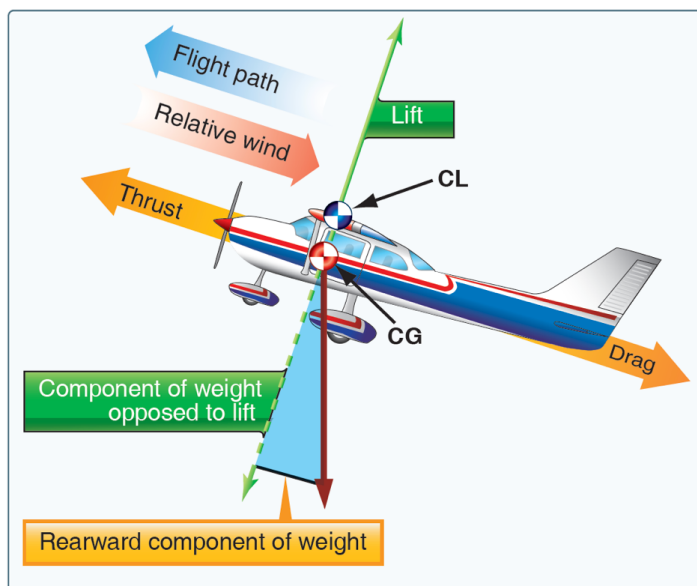
### Stability

- Dynamic vs Static.
- Positive, Neutral, Negative.
- Explain Pitch stability - If pitched up less speed - less tail down force - CG is ahead of Center of Lift so the airplane descends and picks up speed - more tail down force nose rises until back to the trimmed airspeed.
- Explain Yaw Stability - Works like feathers on an arrow.
- Explain Roll Stability - Dihedral only works if there is sideslip present. High wing airplanes use Pendulous effect (keel effect) - CG is lower than wings - roll upset makes airplane wants to place the CG back to the earth.



### Forces in a Climb, Descent and Turn

- Forces in a climb - Lift vector (total reaction) is tilted back - creates a rearward component of lift which adds to drag. There is also a rearward component of weight which also adds to drag. This causes the airplane to slow down in a climb unless added thrust is applied.
- Forces in a descent - Lift vector (total reaction) is tilted forward - creates a forward component of lift which adds to thrust. There is also a forward component of weight which also adds to thrust. This causes the airplane to increase in speed if thrust isn't reduced.
- Forces in a turn - Lift vector is tilted at the angle of bank - Vertical component and horizontal component. Horizontal component turns the airplane, vertical component needs to match weight so the turn can be level. The force that opposes the horizontal component is Centrifugal force, the force that opposes the tilted lift vector is Load Factor. Explain that because additional lift is required to maintain level flight the pilot must apply elevator to maintain the vertical component of lift to balance weight. This additional lift causes induced drag which requires an increase in thrust to maintain the airspeed.



## Flow Charts for Specific Operations

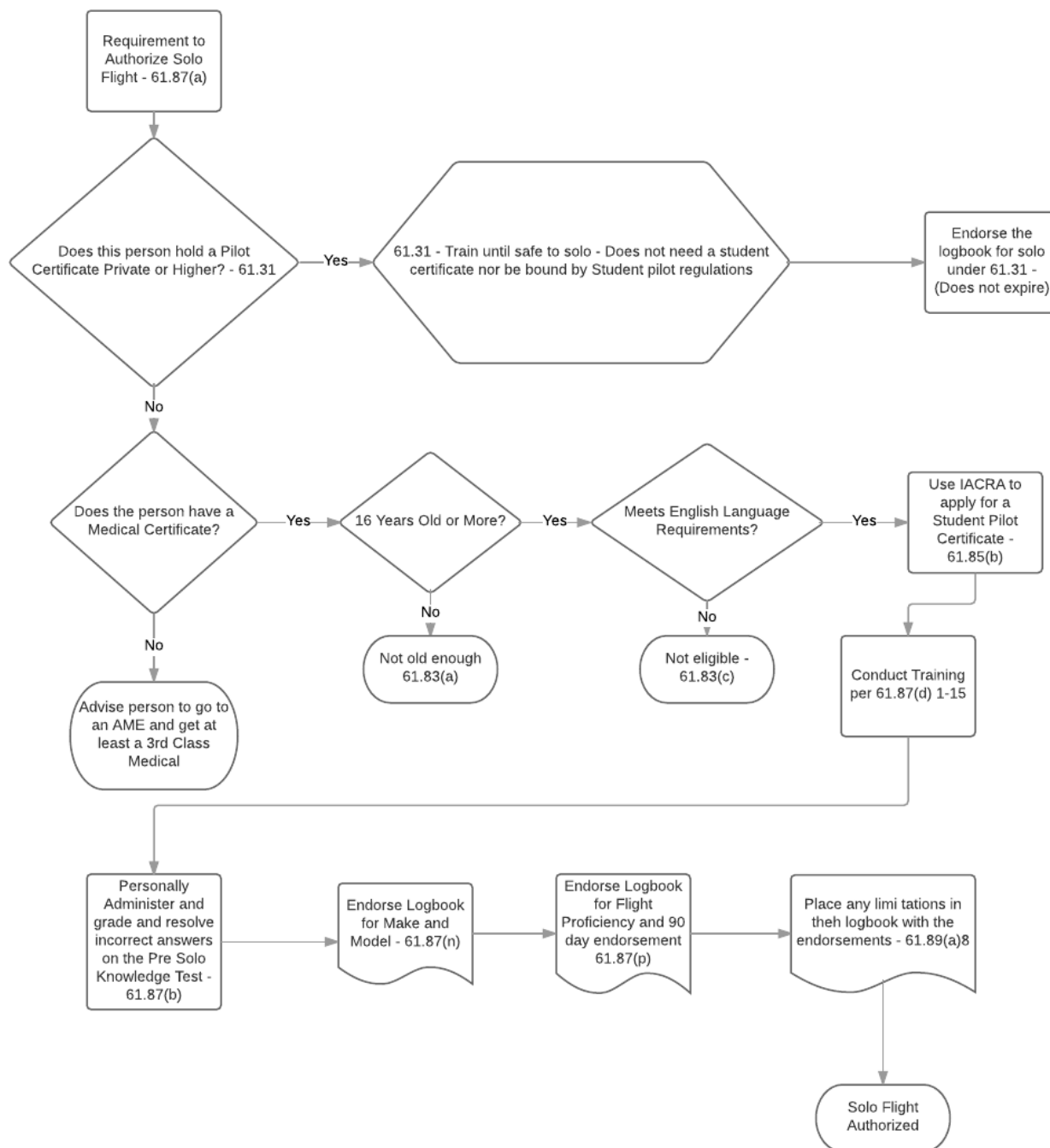
The flow charts that follow are to help the flight instructor with the specific actions such as training required, endorsements, or process that the instructor needs to follow to ensure the correct result.

The flow charts include references to the applicable FAR in most cases, to allow the instructor to find the appropriate reference quickly.

The flow charts that follow are:

1. Process to solo a student pilot or a pilot who holds another category or class rating
2. Additional Solo Privileges
3. Solo Cross Country Flight Requirements
4. Additional Category and/or Class Additions
5. TSA Authorizations Requirements and Procedures
6. Operating in the US on a Foreign License – Process

## Process to Solo a Student Pilot who holds another Category/Class



**Process to Solo a Student Pilot or Pilot who holds another Category/Class**

## Flash Cards

On the following pages we have placed some flash cards that cover certain parts of the fundamentals of instructing from the Aviation Instructor's Handbook (FAA-H-8083-9A) These flash Cards are designed to keep you focused on the main parts of each chapter. There are acronyms to memorize what DPEs and Inspectors are likely to expect for you to have memorized..

You should read the Aviation Instructor's Handbook first, available at [faa.gov](http://faa.gov), and if you are a CFI Bootcamp student, watch all of the FOI videos prior to using this document.

I hope you find these Flash Cards helpful as you study to master the fundamentals of instructing.

- Mike Shiflett, Palo Alto, CA January 2019

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Chapter 1 : Human Behavior  
**Flash Cards**

## *Defense Mechanisms*

**MEMORIZE - DR FRD CPR**

Displacement  
Repression

Fantasy  
Reaction formation  
Denial

Compensation  
Projection  
Rationalization

## FOI Chapter Summaries

The Fundamentals of Instructing, FOI, Chapter summaries are chapter summaries from the Aviation Instructor's Handbook from [faa.gov](http://faa.gov). These chapter summaries are designed to keep you focused on the main parts of each chapter. There are notes on key subjects, bulleted lists and breakout boxes and where possible acronyms to memorize what DPEs and Inspectors are likely to expect for you to have memorized..

You should read the Aviation Instructor's Handbook first, available at [faa.gov](http://faa.gov), and if you are a CFI Bootcamp student, watch all of the FOI videos prior to using this document. The idea is for you to understand the material by reading the handbook and watching our videos, and then have a source like this document that summarizes chapters and points out key ideas and concepts.

I hope you find these chapter summaries helpful as you study to master the fundamentals of instructing.

- Mike Shiflett, Palo Alto, CA January 2019

## Definition of Human Behavior

- 1 The study of how and why humans** function the way they do. Human phases of development influence how to teach them. Newborns are dependent and behave differently than teens and adults behave differently than teens. Most human development tries to attain self-direction.

### Personality Types

As people develop, they gravitate to certain approaches to learning. Some are Rational, Artisan, Guardian etc. They prefer to learn in certain ways depending upon their level of development and personality.

## Human Needs and Motivation

### Maslow's Hierarchy of Needs:

All needs supported in the order of the pyramid. Moving through each level is how the student achieves self-actualization. Self-actualization means the student can perceive themselves accomplishing what they wanted to do as opposed to "I'll never be able to do that".

### Maslow's Pyramid Components

- 1** Physical (Physiological - Food, Shelter ect).
- 2** Safety (Keeping oneself from harm).
- 3** Social (Making one feel belonging).
- 4** Self-esteem (respect from mothers and self-respect).
- 5** Self-actualization (able to see themselves doing what they aspire to do)

Students will automatically satisfy the lowest of needs first

## Human Needs and Motivation

**Motivation:** Without motivation there is no reason to learn.

### Theory X & Y

- Theory X - People are lazy and will avoid doing work
- Theory Y - People are naturally curious and want to work and do good work left unchecked

## Human Factors that Inhibit Learning

### Defense Mechanisms:

Freud said that you will use these to protect your ego. When a person can't deal with their real emotions or reactions you will employ these defense mechanisms.

### MEMORIZE - DR FRD CPR

1. Displacement – Taking it out on someone else, not related to the issue.
2. Repression – Won't let the emotion come to the surface due to trauma.
3. Fantasy – Day Dreaming.
4. Reaction formation – Behaving in an opposite fashion. Unsure of how to express one's emotions.
5. Denial – Doesn't believe it happened.
6. Compensation – Being good at one thing hoping the other thing goes un-noticed.
7. Projection – Placing your emotions on someone else. Projecting how you think on them.
8. Rationalization – Explaining why something couldn't be done.

## Student Emotional reactions

### Anxiety:

#### Normal Reactions to Stress:

- 1 Sweating.
- 2 Avoiding doing something.
- 3 Overly cautious.
- 4 Elevated heart rate.
- 5 Nervousness

#### Abnormal Reactions to Stress:

- 1 Anger at the flight instructor.
- 2 Marked changes in mood.
- 3 Painsaking self-control
- 4 Over cooperatioin
- 5 Inappropriate laughter or singing.

If abnormal reactions to stress is observed:

- Have the person fly with another CFI to help confirm/deny
- DO NOT authorize or endorse for any pilot privilege
- Contact AME or FSDO if safety to public or themselves is suspected

## Teaching The Adult Student

Usually motivated, already has a purpose for learning to fly. They are self-directed (likes self- study courses), needs to have control of the schedule (not a 9 to 5 academy student – the older student usually works), needs a way to keep their self-esteem during training, want to solve new problems by using the knowledge they just learned, and tends to throw away any knowledge they see as no value or frivolous.

**Learning Defined** - A Change of behavior as a result of experience

## Learning Theory

**Learning Framework:**

**Behaviorism Theory** - Reward and Punishment (Carrot and the Stick).

**Cognitive Theory** - is an approach to psychology that attempts to explain human behavior by understanding your thought processes.

**Information Processing Theory** - Humans learn like computers – they gather information, process information, store and retrieve information and form responses to this.

**Constructivism Theory** - Humans construct a unique mental image by using past experience, problem solving tools ect. to new material. Typically produces Higher order thinking skills (HOTS).

**Blooms Taxonomy - 6 Learning Classifications**

- 1 Knowledge.
- 2 Comprehension.
- 3 Application.
- 4 Synthesis
- 5 Analysis.
- 6 Evaluation.

Learning is achieved through these 6 levels. Teachers can test or develop content around any of these classifications once understood. Knowledge – Can recite, Comprehension – Understands why or how but can't do, Application – Can do, Synthesis – can organize materials from various sources, Analysis – can determine an outcome and provide better ways of doing things, Evaluation – can compare and judge.

## Perceptions

**How learning happens:**

**Perceptions** - taking information through the 5 senses.

- 1 Physical organism (need your eyes to see).
- 2 Goals and values (things of no interest aren't perceived well).
- 3 Self-concept (Students who can self-actualize (from Maslow's, can perceive better).
- 4 Time and opportunity – (Need time to observe it and be somewhere it happens).
- 5 Element of threat (If feeling unsafe, harder to perceive (Again Maslow's).