What does positive aircraft control mean?
  How do you know if you have control?

How do you practice positive exchange of flight controls?
  Why is it important?

What is SA?
  What factors contribute to SA?
  Why is loss of SA dangerous?
  What problems might occur if a pilot were to fixate on one source for information and ignore other sources?
  What resources are available to maintain SA?

What does collision avoidance mean?
  Who is responsible for avoiding a collision?
  What measures can you take to reduce the risk of collision?

What is wake turbulence?
  Where might it be encountered?
  Explain how wake turbulence occurs and the effect on other aircraft.
  How do you avoid wake turbulence?

What is LAHSO?
  Where might you encounter it?
  What are your responsibilities?

What is a runway incursion?
  What risks are associated with runway incursion?
  Provide examples where a pilot might be more likely to have a runway incursion.
  List hotspots and other dangerous areas at your airport.
  How do you mitigate identified risks?

What is CFIT?
  Provide situations that might increase the risk of CFIT.
  What resources help reduce the risk of CFIT?

What is ADM?
  What factors are involved in the ADM process?
  What is the DECIDE model?
  What is the 3P model?

What are hazardous attitudes?
  Cite examples of hazardous attitudes.
  How do you reduce risks associated with hazardous attitudes?

What is risk management?
  What is the PAVE checklist?
  What is the IMSAFE checklist?

What is SRM?
  What are on-board resources?
  What are outside resources?
  How does task management relate to SRM?
  Provide examples where workload is high and task management is most critical.
I. **Pilot Qualifications**
   - When is an instrument rating required for flight?
     - What are the currency requirements for an instrument rated pilot?
     - What happens if you don’t stay current?
     - Describe the difference between currency and proficiency.
   - When is an instrument flight plan required?
     - What information does it contain?
     - Describe any differences between the route filed versus the information entered into the G430 flight plan.
   - What information is required for instrument flights?
   - How can the AATD and FTD be used to meet recency requirements?
   - What is an IPC?
     - What is tested?
     - Who can perform an IPC?
     - Where can the requirements be found?

I. **Weather Information**
   - What is your process for gathering weather data before each flight?
     - What methods are recorded?
     - Why is it important to have a briefing record?
   - Detail the weather reports and forecasts available for flight planning purposes.
   - What is a pilot report?
     - How is it filed?
     - Where can they be found?
     - What information is contained in a pilot report?
   - What is a METAR?
     - What information does it contain?
     - Issuance/valid times?
     - Be familiar with RMKs.
   - What is an FA?
     - What information does it contain?
     - Issuance/valid times?
     - What sections is it divided into?
   - What is a surface analysis chart?
     - What information does it contain?
Instrument Study Guide

- Issuance/valid times?
- What is a radar summary chart?
  - What information does it contain?
  - Issuance/valid times?
- Where do you find winds and temperatures aloft?
  - Why are they important?
  - How are values reported?
  - Issuance/valid times?
- How can you determine the freezing level? What factors must be considered?
- What is an AIRMET?
  - SIGMET?
  - Convective SIGMET?
  - What information do they contain?
- What is your process for gathering weather data before each flight?
  - What information is considered before making a go/no-go decision?
- Do weather charts report wind direction in True or Magnetic?
  - Why?
  - How do you convert between the two?
  - Do weather briefers give wind direction in true or magnetic?
- What sources would you use to find stable/unstable air masses?
  - Moisture in the atmosphere?
  - Freezing levels?
  - Frontal activity?
- What are the characteristics of a cold front?
  - Warm front?
  - Which generally provides better weather for flying?
  - How are they represented and on which chart(s)?
- What is an occluded front?
  - Stationary front?
  - How are they represented and on which chart(s)?
- What are the characteristics of a high pressure system?
  - Low pressure system?
  - Which generally causes worse weather for flying?
  - How are they represented and on which chart(s)?
- What is the definition of a ceiling?
  - What weather reports and forecasts provide information to determine the ceiling?
- How are thunderstorms formed?
  - What are warning signs of thunderstorms?
  - What are hazards associated with thunderstorms?
  - What is a microburst and what are the two types?
  - Define wind shear.
- Describe stable and unstable atmospheric conditions.
I. C. Cross-Country Flight Planning

- What is NWKRAFT?
- How do you determine the route and altitude for a cross-country flight?
- What are preferred routes?
  - DPs?
  - STARs?
  - Where can they be found?
- What are the fuel requirements for instrument flight?
- Which performance charts are used for flight planning?
  - Where are they found?
- Define KIAS and KTAS?
  - Where are they used?
  - How do you convert between the two?
- What information is displayed on the Low Enroute Chart?
- What is the difference between a blue and a green colored airport?
- What are minimum IFR altitudes and which guarantee navigation reception?
- Explain the importance of having personal minimums.
- What are the requirements for an alternate?
  - How do you choose one?
  - What are standard and nonstandard alternate minimums?
- What are IFR T/O minimums for part 91, 121, 135?
- What are nonstandard T/O minimums?
- Describe the difference between flight visibility vs reported visibility.
- How do you pick up an IFR clearance when departing from a non-towered airport?
- What is the difference between an ODP and SID?
  - What is a DVA?
- What are the steps to file, open, and close an IFR flight plan?
- When are position reports required and what is contained in the report?
- When do we change the Altimeter setting?

II. A. Aircraft Systems Related to IFR Operations

- What conditions are required for icing?
- Why is icing dangerous?
  - How much aircraft icing does it take to change flight characteristics?
  - What do you do if icing is encountered during a flight?
- Name three commonly encountered types of icing.
  - Is Rime or Clear ice heavier?
  - Why?
- Name three commonly encountered types of aircraft icing.
  - How do we know if we have induction icing in the C-172?
- Describe types of aircraft anti-icing and deicing equipment.
  - List anti-/de-icing equipment on the aircraft you fly.
  - How does icing equipment affect the electrical system?
What does your PoH say about icing if encountered?

II. B. Aircraft Flight Instruments and Navigation Equipment
   - What aircraft equipment is required for IFR flights?
     - Where is that list found?
   - Describe each component of the pitot-static system and how they interact.
   - Describe the turn coordinator and compare/contrast to a turn-and-slip indicator.
   - Describe common errors that can occur with flight instruments.
     - How would you recognize a problem?
     - How do you fix each problem?
     - What instruments can be used in case of a failure?
   - What gyroscopic instrument(s) are in the airplane?
     - What principle do they work on?
     - How many gimbals do they have?
     - What limitations do they have?
     - What corrective actions do they have?
     - What is the difference between an HSI and an HI?
   - How does the magnetic compass work?
     - What errors are associated with it?
     - How do you determine the extent of those errors?
   - What kinds of navigation equipment are installed in the airplane?
     - Are you proficient in using all installed equipment?
   - Are you proficient with the GNS430?
     - How do you use the OBS function?
     - How do you use the GPS for DME?
     - How do you use the “nearest” feature?
   - Describe similarities and differences between conventional flight instruments and a glass cockpit.
   - Describe all major G1000 components (LRUs).
     - Describe what happens if each fails?
     - What is an AHRS?
     - What is an ADC?
   - What are the components of a VOR?
     - What are the service volumes?
     - What is the cone of confusion?
   - Describe different types of VOR equipment checks.
     - How do you perform each?
     - What accuracy is required?
     - How often is a check required?
   - Describe the components of the localizer.
     - Where is it located?
     - What is the volume and range?
   - Describe the components of the glideslope
Instrument Study Guide

- Where is it located?
- What is the volume and range?
- Describe marker beacons.
  - Where are they located?
- Compare and contrast conventional DME and GPS based DME.
- When/where is a transponder required?
- What are the components of ADF/NDB?
  - How do they work?
  - What equipment can be substituted?
- What is an FMS?
  - Autopilot?
  - Do you have a basic understanding of their use?
- What is RAIM?
- What is WAAS?
- How many GPS satellites are required to have RAIM? To use WAAS?
- What is RNP?
  - What are the values?
  - Do we have RNP?
- What are the GPS modes, when do they change, and what is their scaling?
- How do we have to check for RAIM before every flight?
- How does WAAS affect GPS flight planning, navigation, and IAPs?
- What actions are required for failures of any flight or navigation equipment?
- What is CRAFT?
- What is a clearance void time?

III. **B. Holding Procedures**
- What are holding speeds?
  - When do you comply with them?

IV. **A. Flight by Reference to Instruments**
- What is BAI?
- What is attitude instrument flying?
  - Explain the primary/supporting concept.
  - Explain the control/performance concept.

IV. **B. Recovery from Unusual Flight Attitudes**
- What is the process for recognizing an unusual attitude?
  - What primary and secondary instruments should we be looking at?
  - Does it change in a glass cockpit with an AHRS?

VI. **A. Non-Precision Approach and B. Precision Approach**
- What is a circling approach?
  - What distances are associated?
Instrument Study Guide

- What are precision approaches?
  - When do you configure for landing on a precision approach?
  - When do you go missed?
- What are non-precision approaches?
  - When do you configure for landing?
  - When do you go missed?
  - List common missed approach points.
- What is a runway declared distance?
  - What document are they located in?
- What information is contained in 91.175?
- What are ASR and PAR?
  - Compare and contrast the two.
- What is a contact approach?
- List and describe approach categories.
  - How do we calculate them?
- Describe approach lighting systems.
- What is the meaning of the “T” symbol on an IAP?
  - Where would it be located?
- What is the meaning of the “A” symbol on an IAP?
  - Where would it be located?
- What is a VDP?
  - How is it calculated?
- Compare and contrast fly-by vs fly-over waypoints.
- List all requirements to descend on a published portion of an approach.
- Why do some IAPs end with a letter?
  - How do they differ from other approaches?
- What is a feeder route?
- What is a lead radial?
- What is the purpose of the IAF?

VII. A. Loss of Communications
- What are required IFR communications?
  - What items are required in your communication to ATC when out of radar contact?
- What are the procedures for lost communications when on an IFR flight plan?
  - Does it change in VFR conditions?
  - What do we do in IMC when we reach the terminal area of the airport?
  - Why is a clearance limit important?
- Explain light gun signals (NO EXCEPTIONS).
- What do you do if you have an engine failure in IMC?
- How do you calculate ETE/ETA?
Aeromedical Factors-
Be familiar with Spatial Disorientation, Flying at Night, and other Human Factors that could have an adverse effect on a pilot in reduced visibility settings.

Revision Date
July 20, 2017

Comments / Suggestions?
If you have any comments about this study guide or suggestions about content to add in future revisions, please email the Training Department at training@allatps.com.