

APPENDIX 1. REQUIRED INSTRUCTIONAL SUBJECTS FOR FAA-APPROVED TCO CURRICULA

Appendixes and subject matter listed herein may be revised periodically by the FAA to reflect the changing emphasis determined by FAA for the renewal of flight instructor certificates under section

61.197(a)(2)(iii). It is incumbent upon the FIRC sponsor to periodically check the FIRC informational website (e.g., once a month) for any updates or changes in FIRC policy, guidelines, or resources. That website is located under the <http://www.faa.gov> website.

The subject areas described below are those in which instruction is required to be given by holders of authorization to present FAA-approved FIRC curricula. These subject areas may be taught individually or they may be combined when the subjects are such that teaching them in combination is appropriate. However, these subjects should be taught in logical succession and in cohesive units consistent with the instructor attendees' need to know, their ability to understand the subjects, and their application to the instructional process.

The instruction presented should be clearly identifiable as relating to the required subjects listed herein. Not less than 16 hours of instruction must be given in each FIRC program. Incorporated within those 16 hours must be all of the Core topics listed below. There are no minimum time requirements for individual Core topics; however, it is not likely that most individual topics could be comprehensively covered in less than 30 minutes each, though this is not a required time minimum. Some may require more. Some may be accomplished with less. The time expected to be spent on a given topic, both Core and Elective, should be identified in the TCO as well as each topic's expected start and stop times. The balance of the 16-hour program can be filled with topics from Appendix 2, Elective Topics. Selection of any of those Elective topics from Appendix 2 will be approved. At the discretion of the sponsor, additional subject matters germane to flight instruction may be presented as other elective subjects in meeting the total 16-hour requirement; however they must be reviewed by AFS-800 and will be approved on a case-by-case basis. Submission of additional subject matter topics can be made via email through the FAA.gov website and approval will typically take place within a few days via return email.

CORE TOPICS

1) Technically Advanced Aircraft (TAA)

Technically Advanced Aircraft (TAA) are becoming the norm for virtually all new light general aviation aircraft manufactured today. Many manufacturers have stopped producing conventional-gauge aircraft altogether. By definition, a Technically Advanced Aircraft is a general aviation aircraft that contains a GPS navigator with a moving map display, plus any additional systems. Traditional systems such as autopilots when combined with GPS navigators are included. IT includes aircraft used in both VFR and IFR operations with systems certified to either VFR or IFR standards. Many new TAA aircraft employ full "glass panel" displays with multi-axis autopilots. More and more flight schools are employing these aircraft both for primary and advanced flight training and many individuals are purchasing these aircraft for personal use. It is imperative that flight instructors be made aware of this new technology, as they will encounter it

with increasing frequency. While it is not realistic to teach the instructor the intricacies of one system or another during a FIRC, certain issues are universal to all TAA aircraft and should be considered when training in any aircraft so equipped. These would include, at a minimum, concepts of information management (including situational awareness), automation management (including appropriate use of automation), and risk management (including single pilot resource management).

2) FAA/Industry Training Standards (FITS)

Flight instructors today should be familiar with the basic tenets and concepts of the FAA/Industry Training Standards (FITS) program, which is a partnership between FAA, Industry, and Academia designed to enhance general aviation safety and reduce general aviation fatal accidents. The FITS training model is becoming widespread in general aviation. It was originally developed for training in Technically Advanced Aircraft but its tenets can apply to all aircraft. FITS programs create scenario-based, learner-focused training that encourages practical application of knowledge and skills. This is accomplished by developing flight training programs that are more convenient, more accessible, less expensive, and more relevant to today's users of the National Airspace System. FITS products are non-regulatory and incentive driven. The program focuses on expertly managed real-world challenges. Scenario-based training is used to enhance the GA pilots' overall aeronautical skill by building aeronautical decision making, risk management, and single pilot resource management skills into training on basic stick and rudder skills. While FITS itself was not intended for training on non-TAA aircraft, the FAA is consulting closely with industry on ways to address the need to adapt these concepts to other areas of flight training.

3) Sport Pilot

Many consider the advent of the Sport Pilot certification to be one of the most significant changes to the airman certification structure to have occurred in over 50 years. Because of the growing cost to acquire the Private Pilot certification, more and more aviation enthusiasts are considering the Sport Pilot as a satisfactory and economical alternative. Many aircraft already meet the Light Sport aircraft criteria, and many manufacturers are now producing modern Light Sport aircraft. It is likely that flight instructors will be asked to provide information and possibly training for this new certificate. The instructor should be made aware of the requirements for, and privileges and limitations of, the Sport Pilot certification. Of particular interest has been the medical requirement. Instructors must be made aware of the new endorsement requirements for the Sport Pilot. Since Light Sport Aircraft must meet certain criteria, a well informed flight instructor would be expected to be aware of the basic requirements.

4) Security-Related Special Use Airspace

Several significant airspace changes have resulted from the events of 9/11. Pilots-in-training depend on their instructors to guide them through the intricacies of the new and changing airspace regulations, and to make them aware of the consequences of violating those airspaces. "Floating" TFRs, particularly common during election years, are a significant challenge for pilots. New regulations regarding power plants and stadiums are now in place. Instructors must have thorough knowledge about concepts entirely new to many GA pilots, such as the Washington, D.C. Flight Restricted Zone (FRZ) and Air Defense Identification Zone (ADIZ). In addition, all pilots must be made fully aware of intercept procedures. The consequences of violating airspaces have become much more severe and often allow little flexibility with respect to enforcement.

5) Transportation Security Administration (TSA)

The Transportation Security Administration (TSA) now has a role in flight-training. Consequently, flight instructors should know which airman certificates TSA is interested in. Instructors must also be aware of the requirements for citizenship documentation, record keeping, foreign student processing, flight instructor and flight school security awareness training, and more. Not following the TSA guidelines properly can have serious consequences both for the student and for the flight instructor.

6) GPS Navigation

GPS is quickly becoming the principal means of navigation for many pilots. Even pilots of aircraft such as Piper Cubs and Ercoupes can be found using highly-sophisticated, hand-held color moving-map GPS receivers for navigating. More accurate navigation is a good thing, but dependency on GPS can lead to weakness in other forms of navigation (e.g., pilotage and dead-reckoning). Flight instructors should be able to teach, at a minimum, proper use of GPS systems, their limitations, database update requirements, and regulatory requirements.

7) Integrated Airman Certification and/or Rating Application (IACRA).

The Integrated Airman Certification and/or Rating Application system (IACRA) is an Internet-based (paperless) method of processing an airman's 8710 application. The system allows the applicant to submit his or her application online, and the instructor can log on and electronically sign the document. The certifying officer (usually a Designated Pilot Examiner, DPE) can then, at the beginning of the practical test, call up the applicant's instructor-signed application, verify the information and, when the practical test is complete, simultaneously print the applicant's temporary airman certificate (or letter of continuance or unsatisfactory notice) and submit the form to the Airman Certification Branch in Oklahoma City. IACRA is gaining wide acceptance and some flight training facilities use it exclusively. Since it is expected that use of IACRA will be mandatory for all applicants and flight instructors in the future, it is important that the flight instructor become familiar with the system as soon as possible.

8) Aircraft Operational Limitations

A Cessna 172 is a four-place airplane. Or is it? A Cherokee-Six is a six-place airplane. Or is it? Not intimately knowing their aircraft's operational limitations has caused more than a few pilots their lives. And yet, many pilots still, either deliberately, or through ignorance, ignore the limitations of their aircraft. Many do not even remember how to perform basic weight-and-balance calculations. Many more have never carefully read through their Approved Flight Manual. Regardless of whether the pilot is deliberately lax or simply ignorant of these issues, it is the flight instructor's responsibility to continually and repeatedly emphasize their importance and seriousness. Most instructors do. All need to be reminded and shown how best to convey the importance and implications of, and methods for, operating within an aircraft's limitations.

9) Effective Teaching

Flight instructors are highly trained individuals. They hold vast amounts of knowledge gleaned during their own training and through their own experiences. Having a well-founded basis of knowledge is critical to being an effective instructor. However, if that highly trained and knowledgeable instructor is unable to convey their knowledge to a student, then he or she is ineffective as a flight instructor, regardless of knowledge and expertise. Teaching is an art. It requires not just an understanding of the topic, but an understanding of how people think and learn. It requires a certain amount of psychological understanding. Virtually all instructors took coursework in the Fundamentals of Instruction, which offers a basic theoretical framework for the teaching and learning processes. In addition, it is helpful to remind FIRC participants that flight instructing is fundamentally a “people skill.” Flight instructors should present themselves in a professional manner. They should be friendly, not bossy, should treat their students as equals not as subordinates, be able to recognize the signs of boredom and frustration and know how to deal with them. Instructors should be able to quickly recognize when they themselves become frustrated with students who may not be progressing as they think they should and know how to deal with it.

10) Safety Trends in GA

Over the last 10 years, accident rates have been continuing a downward trend, but there is still plenty of room for improvement. What are some of the causes of accidents? What types of accidents have declined? What kinds have increased, and why? Are there things that flight instructors in particular can do influence those trends? While we may not be completely sure of all of the factors that might be directing those trends, the one thing we can all be sure of is that they all involved pilots. And all pilots receive training. Those pilots receive their training from flight instructors. Since flight instructors are on the front lines, it is important for them to know what is leading to accidents and incidents. The FIRC provides a good opportunity for the flight instructor to get the latest information on accident/incident trends, factors, and causes.

11) Risk Management / Risk Intervention Strategies

Risk management / risk intervention is much more than the simple definitions of the terms might suggest. Risk management and risk intervention are decision-making processes designed to systematically identify hazards, assess the degree of risk, and determine the best course of action. These processes involve the identification of hazards, followed by assessments of the risks, analysis of the controls, making control decisions, using the controls, and monitoring the results. Flight training activities take place in a “time-critical” framework for risk management. One way to put these concepts to work is for instructors to teach the “3P” model of risk management: **P**erceive, **P**rocess, **P**erform. We can help PERCEIVE hazards by using the **PAVE** checklist of: **P**ilot **A**ircraft, **e**n**V**ironment, and **E**xternal pressures. We can PROCESS hazards by using the **CARE** checklist of: **C**onsequences, **A**lternatives, **R**eality, **E**xternal factors. Finally, we can PERFORM risk management by using the **TEAM** choicelist of: **T**ransfer, **E**liminate, **A**cept, or **M**itigate. These concepts are relatively new in the general aviation training world but have been shown to be extraordinarily useful in lowering accident rates in the world of air carriers. Instructors should be well versed on these concepts.

12) Takeoffs/landings/low altitude maneuvering

There's an old saying: "takeoffs are optional, landings are mandatory." One might go a step farther to say that, if one is to fly at all, both are mandatory. Approximately 65% of all general aviation accidents occur during takeoffs, landings, or low altitude maneuvering and virtually all are pilot-related. We can't eliminate the need to maneuver near the ground or to take off or land, but we can address the skill issues with the pilots performing those maneuvers. Teaching proper takeoff and landing technique can be as much an art as a skill, and the instructor needs as much information as he or she can get so that they can better understand the types of difficulties that pilots are having during those phases of flight and what the latest thinking is regarding how to best deal with them. There are multiple approaches to teaching takeoffs and landings and instructors may need to vary their training technique from one client to another. The FIRC venue provides the instructor the opportunity to learn new techniques and to share techniques among other instructors so that they can become better equipped to contribute to increasing the safety of those necessary phases of flight through the training of other pilots.

13) Runway Incursions

One of the FAA's top priorities is to reduce the frequency of runway incursions and the risk of a runway collision. The FAA aims to reduce the severity, number and rate of runway incursions by implementing a combination of technology, infrastructure, procedural and training interventions to decrease the prevalence of human errors and increase the error tolerance of airport surface movement operations. One of the most critical areas is that of pilot training. That is where the flight instructor comes in. It is critically important that the flight instructor be well versed in the "mechanics" of what leads to a runway incursion, the various types of incursions that can and do take place, and the techniques that can prevent these occurrences. The instructor should be made aware of those areas of operation where pilots are failing to properly place their aircraft and to teach them to be aware of and vigilant for the "traps" that can make a pilot unaware of a pending unsafe condition before it happens. A well-trained instructor can then transfer that awareness to their flying students each time they get into an airplane with them.

14) Pilot Proficiency Wings Program

Every pilot is required to have some kind of recurrency training at least once every 24 calendar months. Most common is the Flight Review, in which the pilot receives a minimum of one hour of flight instruction and one hour of ground instruction once within that 24 month period. There is an alternative that benefits both the pilot and the instructor: the Pilot Proficiency Wings Program ("Wings"). The Wings program is currently in transition, moving toward a new model that will offer three levels of achievement: Basic, Advanced and Master. Topics will be designed to target specific emphasis areas derived from accident data. The levels will be attained and maintained on a rolling basis based on the accrual of educational credits of ground knowledge and flight training. Standards of achievement will be based on the Practical Test Standards. Record-keeping and verification will be online. Like the old Wings program, achievement of a level will substitute for a flight review. This program is a major FAA Safety Team initiative and flight instructors need to be aware of how the program works and how it can benefit both their clients and themselves.

15) FAASTeam

The old Safety Program has been reengineered and renamed the FAA Safety Team, or FAASTeam. Each of the FAA’s eight regions now has a Regional FAASTeam Office dedicated to this new safety program. The FAASTeam is joining forces with individuals and the aviation industry to create a unified effort against accidents and “tip” the safety culture in the right direction. These include FAASTeam Members, those individuals who make a conscious effort to promote aviation safety and become part of the shift in safety culture; FAASTeam Representatives, aviation safety volunteers who wish to work closely with FAASTeam Program Managers (FPM) to actively promote safety; and, FAASTeam Industry Members, who include companies or associations of people that have a vested interest in aviation safety. The various FAASTeam affiliates will receive training and support from the FAASTeam program managers and representatives so that they can help the FAASTeam objective of enhancing safety throughout General Aviation. Flight Instructors have many resources available to them through the FAASTeam offices and the FAASafety.gov website, and should be aware of how to acquire and use those resources and how to participate, and encourage their clients to participate, in the program.

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