

July 2004

**Florida Department of Education  
Division of Community Colleges  
CURRICULUM FRAMEWORK**

**Program Title: PROFESSIONAL PILOT TECHNOLOGY**

**Occupational Area:** Industrial Education PSAV

**CIP Number:** 0649010200 ( A. A. S. Degree) 1649010200 (A. S. Degree)

**Grade Level:** A.A.S./A.S. Degree

**College Credits:** – 64 hours

**I. MAJOR CONCEPTS/CONTENT:** The purpose of this program is to prepare students for initial employment with occupational titles as aircraft pilot, airplane pilot, commercial (196.263-014), or to provide supplemental training for persons previously or currently employed in these occupations. The content should include, but not be limited to, communications skills, leadership skills, human relations and employability skills, safe and efficient work practices, Federal Aviation Administration pilot certification procedures, aircraft systems and components, flight safety, physics and aerodynamics, and instrumentation. This program focuses on broad, transferable skills. It stresses understanding and demonstration of the following elements of the Pilot Technology industry: planning, management, finance, technical and production skills, underlying principles of technology, labor issues, community issues and health, safety, and environmental issues.

**II. LABORATORY ACTIVITIES:** Classroom and laboratory activities are an integral part of this program and provide instruction in preflight preparation, primary flight, instrument and flight maneuvering, and commercial pilot preparation. These activities provide instruction in the use of equipment and materials used by pilots. The current FAR will reflect the needed equipment and materials such as radio headsets, E6-B and electronic computers, aeronautical charts, plotters, fuel testers and flight log books. There are a wide variety of flight simulators available as an alternate to airborne training. Significant capital investments in facilities and equipment may be required in this program.

**TOOLS AND EQUIPMENT**

1. Radio Headset
2. Navigation Computer (Manual or electronic)
3. Aviation Sectional and Enroute Charts and Flight Publications
4. Navigational Plotters
5. Fuel Tester with filter screen
6. Pilot Flight Log Book
7. Ear Protection Devices
8. Knee Boards
9. Flashlight
10. Flight Publication Documents Holder

### III. SPECIAL NOTE:

1. The National Intercollegiate Flight Association is the appropriate student organization for providing leadership training and for reinforcing specific pilot skills. When provided, the following organizations can be an integral part of the Prof Pilot Technology career and technical instructional program, and the activities of such organizations are defined as part of the curriculum in accordance with Rule 6A-6.064, FAC: Air Line Pilot's Association (ALPA) Air Transport Association of America (ATA), Aircraft Owners and Pilots Association (AOPA), American Helicopter Society, International American Institute of Aeronautics and Astronautics (AIAA), Seaplane Pilots Association (SPA), Civil Air Patrol, Flight Safety Foundation, and the National Association of Flight.
2. There are many job functions in the flight operations support area, which require the knowledge and judgment of a private pilot without actually flying. These jobs have many titles depending on the size and type of aviation activities. Typical functions are aircraft scheduling, parking, servicing, aircraft rental, coordinating maintenance support, accepting and forwarding flight plans and ground school instructor. The typical length of this program for the average achieving student is an Associate Degree. Prior to beginning flight training, students will be required to pass a flight physical from an FAA approved medical examiner. Community Colleges initiating this program are strongly encouraged to visit existing Florida Community Colleges or Civilian Aviation Institutions with active programs. Organizations for students such as those mentioned, when provided shall be an integral part of the vocational instructional program, and the activities of such organizations are defined as part of the curriculum in accordance with Rule 6A-6.064, FAC.

**Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Adult students with disabilities must self-identify and request such services. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.**

3. SCANS Competencies: To accomplish the Secretary's Commission on Achieving Necessary Skills (SCANS) competencies, instructional strategies for this cluster must include methods that require students to identify, organize, and use resources appropriately; to work with each other cooperatively and productively; to acquire and use information; to understand social, organizational, and technological systems; and to work with a variety of tools and equipment. Instructional strategies must also incorporate methods to improve students' personal qualities and higher-order thinking skills.
4. The cooperative method of instruction may be utilized for this program. Whenever the cooperative method is offered, the following is required for each student: a training plan,

signed by the student, teacher and employer which includes instructional objectives and a list of on-the-job and in-school learning experiences; a work station which reflects equipment, skills and tasks relevant to the occupation the student has chosen as a career goal. The student must receive compensation for work performed.

5. To be transferable statewide between institutions, this program/course must have been reviewed, and a “transfer value” assigned the curriculum content by the appropriate Statewide Course Numbering System discipline committee. This does not preclude institutions from developing specific program or course articulation agreements with each other. The typical length of this program for the average achieving student is an Associate Degree (64 credits).

#### **IV. INSTRUCTOR QUALIFICATIONS Specialty Instructor Qualifications:**

Instructors teaching subjects that have certifications in the subject areas should be so certified and have at least three years of industry experience in the subject area. Instructors should have related industry experience (subject matter expertise) applicable to discipline being taught. For community colleges, the minimum should be in accordance with regional accreditation boards plus at least three years of industry experience in the discipline.

Since Public Safety is affected by the performance of professional pilots, the training subjects, instructor certification, written and performance exams, training records and licensing are controlled by the federal government through Federal Aviation Regulations. This dictates the curriculum content and instructor qualifications for this Professional Pilot Technology Program.

**Flight Instructor Qualifications:** All flight program instructors in ground training classes and airborne instruction must be currently certified in the subject area. Instructors certified in additional ratings such as multi-engine instructor (MEI) will allow more flexibility within the program, since some students who enter these type programs will have previously achieved FAA certified flight skills. These can be evaluated for completed credit on an individual basis.

**Academic Instructor Qualifications:** A Masters Degree in the subject area is preferred. A Bachelor Degree with eighteen hours of coursework in the subject area is a minimum.

#### **PROFESSIONAL PILOT TECHNOLOGY**

**OCCUPATIONAL COMPLETION POINT DATA CODE D: COMMERCIAL PILOT INSTRUMENT PILOT (PROFESSIONAL PILOT)(992 hours)(64 credits)**

**OCCUPATIONAL COMPLETION POINT DATA CODE C GROUND SCHOOL INSTRUCTOR AND FLIGHT OPERATIONS STAFF (480 hours)(30 credits)**

**OCCUPATIONAL COMPLETION POINT DATA CODE B PRIVATE PILOT (224 hours)(27 credits)**

**OCCUPATIONAL COMPLETION POINT DATA CODE A FLIGHT LINE SERVICE TECHNICIAN (144 hours)(9 credits)**

**V. INTENDED OUTCOMES:** After successfully completing the program, the student will be able to:

**OCCUPATIONAL COMPLETION POINT – DATA CODE - A**

01.0 Demonstrate an understanding of safe and effective work practices.

**OCCUPATIONAL COMPLETION POINT – DATA CODE - B**

- 02.0 Demonstrate an understanding of fundamentals of flight.
- 03.0 Understand and explain pertinent Federal Aviation Administration regulations.
- 04.0 Demonstrate understanding of meteorology.
- 05.0 Demonstrate knowledge of aircraft communications equipment.
- 06.0 Demonstrate knowledge and an understanding of aircraft propulsion, and associated systems.
- 07.0 Demonstrate an understanding of navigation systems and procedures.
- 08.0 Demonstrate flight planning skills.

**OCCUPATIONAL COMPLETION POINT – DATA CODE - C**

- 09.0 Demonstrate effective communication skills.
- 10.0 Demonstrate analytical skills.
- 11.0 Demonstrate understanding of applied sciences.

**OCCUPATIONAL COMPLETION POINT – DATA CODE - D**

- 12.0 Demonstrate workforce/workplace readiness skills.
- 13.0 Demonstrate aircraft operations.
- 14.0 Explain business economic fundamentals.

**VI. STUDENT PERFORMANCE STANDARDS**

**OCCUPATIONAL COMPLETION POINT – DATA CODE – A**

**01.0 DEMONSTRATE AN UNDERSTANDING OF SAFE AND EFFECTIVE WORK PRACTICES**—The student will be able to:

- 01.01 Demonstrate an awareness and understanding of health and safety hazards, prevention and correction of environmental problems and know the solutions unique to the industry.
- 01.02 Demonstrate an awareness and understanding of fueling operations.
- 01.03 Demonstrate an understanding of situation awareness.
- 01.04 Demonstrate an awareness and understanding of fire hazards and the ability to control and extinguish fires.
- 01.05 Demonstrate an awareness and understanding for the need of safety devices, controls, guards and equipment.

**OCCUPATIONAL COMPLETION POINT – DATA CODE – B**

**02.0 DEMONSTRATE AN UNDERSTANDING OF FUNDAMENTALS OF FLIGHT**—The student will be able to:

- 02.01 State and give examples of Newton's three laws of motion.
- 02.02 Name and compare the four forces of flight.
- 02.03 Describe an airfoil.
- 02.04 Tell how lift is produced.
- 02.05 Discuss how and why an airplane stalls and spins.
- 02.06 Describe and explain how pitot/static vacuum, pressure and engine instruments work.
- 02.07 Explain the aircraft design performance and operation.
- 02.08 Explain how human factors affect aviation safety.

**03.0 UNDERSTAND AND EXPLAIN FEDERAL AVIATION ADMINISTRATION REGULATIONS**—The student will be able to:

- 03.01 Explain major portion of Parts 1, 61, 67, 91, 135 and NTSB of the Federal Aviation Regulations.

**04.0 DEMONSTRATE UNDERSTANDING OF METEOROLOGY**—The student will be able to:

- 04.01 Describe the composition, circulation and stability of the atmosphere.
- 04.02 Demonstrate an understanding of air mass development, the movement of fronts and their effect on aviation.
- 04.03 Demonstrate an awareness of weather hazards to aviation and an understanding of how to avoid them.
- 04.04 Demonstrate the ability to access weather information prior to and during flights through a variety of media.
- 04.05 Interpret printed reports, forecasts and graphic weather products.

**05.0 DEMONSTRATE KNOWLEDGE OF AIRCRAFT COMMUNICATION EQUIPMENT**—The student will be able to:

- 05.01 Use and explain aircraft voice communication equipment.
- 05.02 Explain function and use of ELT's, voice recorders, and other emergency communication systems.
- 05.03 Demonstrate use of proper phraseology in ATC communications.
- 05.04 Discuss uses and limitations of portable transceivers.
- 05.05 Demonstrate use of phonetic alphabet.

**06.0 DEMONSTRATE KNOWLEDGE AND UNDERSTANDING OF AIRCRAFT PROPULSION AND ASSOCIATED SYSTEMS**—The student will be able to:

- 06.01 Describe and identify reciprocating and turbine engine components.
- 06.02 Describe a typical cooling system.
- 06.03 Describe and sketch a basic float type carburetor.
- 06.04 Describe the advantages of a fuel-injected engine.
- 06.05 Describe a typical lubrication system.

- 06.06 Describe a typical magneto ignition system, including proper magneto checks.
- 06.07 Describe the difference between a normally aspirated engine and one that is supercharged or turbocharged.
- 06.08 Demonstrate basic operation of an aircraft engine, including proper interpretation of instruments and operation of throttle, mixture control, carburetor heat control.

**07.0 DEMONSTRATE AN UNDERSTANDING OF NAVIGATION SYSTEMS AND PROCEDURES**—The student will be able to:

- 07.01 Define radio navigation.
- 07.02 Explain the magnetic compass.
- 07.03 Describe and demonstrate VOR, LORAN, and GPS navigation.
- 07.04 Describe and demonstrate the ADF equipment.
- 07.05 Explain DME and RNAV principles.
- 07.06 Demonstrate usage of magnetic coordinates.
- 07.07 Demonstrate the use of a flight computer.
- 07.08 Explain sectional charts and their use.
- 07.09 Explain high and low en route and terminal charts and approach plate.
- 07.10 Explain lost communications emergency procedures VFR and IFR.
- 07.11 Read and interpret aircraft performance charts.
- 07.12 Plot and explain a cross-country course.
- 07.13 Describe the FAA national airspace system.
- 07.14 Define Standard Departure and Standard Approach procedures.

**08.0 DEMONSTRATE FLIGHT PLANNING SKILLS**—The student will be able to:

- 08.01 Explain major portions of Parts 1, 61, 67, 91 and 830 of the Federal Aviation Rules and Regulations.
- 08.02 Define weight and balance.
- 08.03 Define center of gravity, moment, datum line, CF envelope basic empty weight and gross weight.
- 08.04 Solve given weight and balance problems.
- 08.05 Determine route of flight.
- 08.06 Demonstrate acquisition of appropriate weather data.
- 08.07 Demonstrate proper selection of destination/enroute/alternate airports.
- 08.08 Explain fuel requirements.
- 08.09 Calculate and compute weight/balance.
- 08.10 Calculate aircraft performance.
- 08.11 Access and analyze NOTAMS.
- 08.12 Acquire and define mission profile.
- 08.13 Demonstrate and explain a flight log.
- 08.14 Demonstrate methods in VFR/IFR flight plans.

**OCCUPATIONAL COMPLETION POINT – DATA CODE – C**

**09.0 DEMONSTRATE EFFECTIVE COMMUNICATION SKILLS**—The student will be able to:

- 09.01 Write logical and understandable statements, or phrases, to accurately fill out forms/invoices commonly used in business and industry.

- 09.02 Read and understand graphs, charts, diagrams, and tables commonly used in this industry/occupation area.
- 09.03 Read and follow written and oral English instructions.
- 09.04 Answer and ask questions coherently and concisely.
- 09.05 Read critically by recognizing assumptions and implications and by evaluating ideas.
- 09.06 Demonstrate telephone/communication skills.
- 09.07 Demonstrate knowledge and use of appropriate computer skills.
- 09.08 Demonstrate interpersonal skills and explain the benefits of CRM.

**10.0 DEMONSTRATE ANALYTICAL SKILLS**—The student will be able to:

- 10.01 Solve problems for volume, weight, area, circumference, and perimeter measurements for rectangles, squares, and cylinders.
- 10.02 Add, subtract, multiply and divide using fractions, decimals, whole numbers, percentages, and ratios.
- 10.03 Demonstrate an understanding of federal, state and local taxes and their computation.
- 10.04 Demonstrate understanding and use of the metric system.

**OCCUPATIONAL COMPLETION POINT – DATA CODE – D**

**11.0 DEMONSTRATE UNDERSTANDING OF APPLIED SCIENCES**—The student will be able to:

- 11.01 Draw conclusions or make inferences from data.
- 11.02 Understand pressure measurement in terms of P.S.I. (pounds per square inch). and kPa (kilopascal).

**12.0 DEMONSTRATE WORKFORCE/WORKPLACE READINESS SKILLS**—

The student will be able to:

- 12.01 Identify reasons people work.
- 12.02 Describe connections between jobs, careers, family life, etc.
- 12.03 Conduct an individual inventory of personal work experience skills.
- 12.04 Develop a career plan.
- 12.05 Understand the information and ability required for different careers.
- 12.06 Compare occupation requirements and benefits associated with employment.
- 12.07 Locate, select, and process classified newspaper and magazine advertisements.
- 12.08 Identify and locate government and private employment agencies and/or computer-assisted job search programs.
- 12.09 Identify and locate personal resource materials (birth certificates, diplomas, training certificates, driver's license, and social security card).
- 12.10 Understand the importance of personal/professional job search information.
- 12.11 Develop a job card file (for specific job leads, requirements, employer names, interview information, and personal notes).
- 12.12 Use appropriate communication skills when using the telephone or email to talk with an employer.
- 12.13 Describe and give examples of job interview situations, including prepared questions to ask the job interviewer.

- 12.14 Identifies proper behavior/attitudes for job interviews.
- 12.15 Demonstrates skillful methods in job interviews (grooming, dress, and verbal/nonverbal communication techniques).
- 12.16 Develop a personal fact sheet that includes personal references, work history, educational information, and other related information.
- 12.17 Read, interpret, and complete a job application and attach a well composed resume' with cover letter.
- 12.18 Write a follow-up letter after the interview with appropriate comments.
- 12.19 Interpret wages, deductions, benefits, and taxes.
- 12.20 Interpret timekeeping forms, timecards, and timesheets, as applicable.
- 12.21 Interpret pay schedules and fringe benefits, medical insurance, and retirement plans.
- 12.22 Understand the importance of contracts and union agreements.
- 12.23 Show knowledge of employee handbooks, personnel policies, and workers compensation.
- 12.24 Identify safety signs found in places of employment and safe work procedures.
- 12.25 Understand the importance of reporting health and safety questions to the appropriate person.
- 12.26 Understand safe work clothes and good health rules/appropriate dress habits.
- 12.27 Understand relations to job training, performance, retention, promotion and changes by describing career job goals.
- 12.28 Identify feelings and opportunities that affect success for job advancement and retention.
- 12.29 Demonstrate the ability to apply or transfer skills learned in one job situation to another.
- 12.30 Identify computer skills that affect job retention and advancement.
- 12.31 Interpret and write work related correspondence (notes, memos, and letters).
- 12.32 Know how to react to constructive criticism and when to make personal changes or resign from a job.
- 12.33 Analyze and solve workforce problems.
- 12.34 Demonstrate appropriate use of the phone or cell phone in a workplace setting.
- 12.35 Demonstrate the ability to work with others and communication skills while addressing customers and clients.
- 12.36 Demonstrate the process of taking action to meet the needs and solve the problems of customers.
- 12.37 Demonstrate effective body language and its influence on the observer.
- 12.38 Identify sexual harassment issues in the workplace.
- 12.39 Identify and use different approaches when working within multicultural workforce groups.
- 12.40 Identify techniques for handling stress and time management problems on the job.
- 12.41 Understand the advantages and disadvantages of a computer, possible uses of a computer system, and proper procedures to maintain computer/network security.
- 12.42 Demonstrate knowledge of "Florida Right-To-Know Law" as recorded in Florida statues Chapter 442.
- 12.43 Demonstrate the skills required to pass the written, oral, and practical FAA multi-engine commercial instrument pilot's examination.

**13.0 DEMONSTRATE AIRCRAFT OPERATIONS**—The student will be able to:

- 13.01 Obtain FAA commercial pilot certification with instructor rating.
- 13.02 Demonstrate the operation of aircraft in accordance with FARs and AFMS.
- 13.03 Identify specific aircraft handling characteristics.
- 13.04 Explain Crew Resource Management.
- 13.05 Demonstrate proper passenger briefing procedures.
- 13.06 Demonstrate post-operation report completion.
- 13.07 Demonstrate situation awareness.
- 13.08 Demonstrate correct decision-making skills.

**14.0 EXPLAIN BUSINESS ECONOMIC FUNDAMENTALS**—The student will be able to:

- 14.01 Determine Origination and Destination.
- 14.02 Explain a mission profile.
- 14.03 Determine personnel requirements.
- 14.04 Determine flight crew schedule requirements.
- 14.05 Demonstrate an understanding of logistical support requirements.
- 14.06 Demonstrate ability to select appropriate aircraft.
- 14.07 Demonstrate understanding of customer relation principles.

## WEBSITE AND DISTANCE LEARNING INFORMATION

**AVIATION OPERATIONS/ADMINISTRATION:** The purpose of this section is to provide a sample of the currently available distance learning products and websites, which can be used to enhance the Aviation Operations/Administration program. It is not intended to recommend any specific vendor or online program.

### Web Sites

[www.faa.gov](http://www.faa.gov)

[www.corp-visions.com/mgtcourses.html](http://www.corp-visions.com/mgtcourses.html)

[www.adt.com](http://www.adt.com)

[www.amtech.com](http://www.amtech.com)

[www.flightsafetyonline.com](http://www.flightsafetyonline.com)

<http://aviation.hntb.com/>

<http://www.louisberger.com/index1.php?id=sectors>

<http://todaysmilitary.com>

[http://www.careersinthemilitary.com/index.cfm?fuseaction=search.detail&mc\\_id=67](http://www.careersinthemilitary.com/index.cfm?fuseaction=search.detail&mc_id=67)

[www.cam.org/~icao](http://www.cam.org/~icao)

[www.iatac.com/html/amt.html](http://www.iatac.com/html/amt.html)

[www.iatac.com/html/flight\\_.html](http://www.iatac.com/html/flight_.html)

[www.flightsafetyonline.com](http://www.flightsafetyonline.com)

[www.aviationnow.com](http://www.aviationnow.com)

[www.air-transport.org](http://www.air-transport.org)

[www.raa.org](http://www.raa.org)

[Airnav](#)

[Bureau of Transportation Statistics](#)

[Department of Transportation](#)

[Econet](#)

[Environmental Protection Agency](#)

Institutions with related Distance Learning programs

- \*Embry Riddle Aeronautical Univ: <http://www.db.erau.edu>
- \*Miami-Dade Community College: <http://www.mdc.edu>
- \*Florida Institute of Technology: <http://www.fit.edu>
- \*Delta Connection Academy:  
<http://www.deltaconnectionacademy.com/html/home.html>
- \*Utah Valley State College: <http://www.uvsc.edu/disted/>
- Aerolearn: <http://www.aerolearn.com/>
- <http://www.airportnet.org/depts/regulatory/arff/airfam/>
- <http://pages.prodigy.net/jedinein/cfi/irindex.htm>
- \*<http://www.skylineaero.com/Skylineaero%20Course%20Catalog.htm>
- [http://www.geocities.com/m\\_drag/Lpwx.doc](http://www.geocities.com/m_drag/Lpwx.doc)
- \*<http://www.miramarcollege.com/programs/avia/avia130/lessonplan.asp>
- \*<http://www.agschools.com/adxcorresp.htm>
- \*<http://indstate.edu/distance>
- \*<http://www.excelsior.edu/>
- <http://www.allstar.fiu.edu/>
- <http://www.firstflight.com>
- <http://www.av8n.com/how/>

\* = These programs are offered at a cost.