



North Texas Aviation Education Initiative

NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS

Aviation Career Paths

November 2009



North Texas Aviation Education Initiative

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AVIATION CAREER PATHS

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A. GLOSSARY

This section defines acronyms and abbreviations used throughout the document.

Term	Description
FBO	Fixed-base Operator
GA	General Aviation
MRO	Maintenance and Repair and Overhaul
NCTCOG	North Texas Council of Governments
STEM	Science, Technology, Engineering and Math



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AVIATION CAREER PATHS

B. OVERVIEW

The aviation industry has a myriad of paths that can lead to a successful and satisfying career. For most employers in aviation jobs, it begins with an early interest in aviation sparked by a vacation trip on an airline plane, living near an airport or even watching movies. As this interest develops, a young person's awareness of available aviation careers is often focused on the most visible and seemingly glamorous of jobs—an airline pilot.

Coupled with these external influences, young persons generally focus on mathematics and science with the perception that one must have a thorough understanding of these subjects as core competencies to be a pilot. It is unfortunate that students who do not do well in STEM (science, technology, engineering and math) courses often are not exposed to the vast array of additional aviation careers available to them.

Many students interested in aviation generally harbor career goals that are narrowly focused on flying for a major airline and tend to seek out the specific aviation program that suits their individual interests. Important selection criteria includes the program's perceived reputation, tuition and fees, availability of scholarships and other financial assistance, cost of living expenses and location.

On the other hand, for example, a student not expressly interested in aviation as a young person and currently enrolled in a two-year business administration degree program, could change majors (and schools) to pursue an aviation-oriented degree once interest develops. This could happen as a result of talking to friends, students already in the aviation program, academic advisors and others.

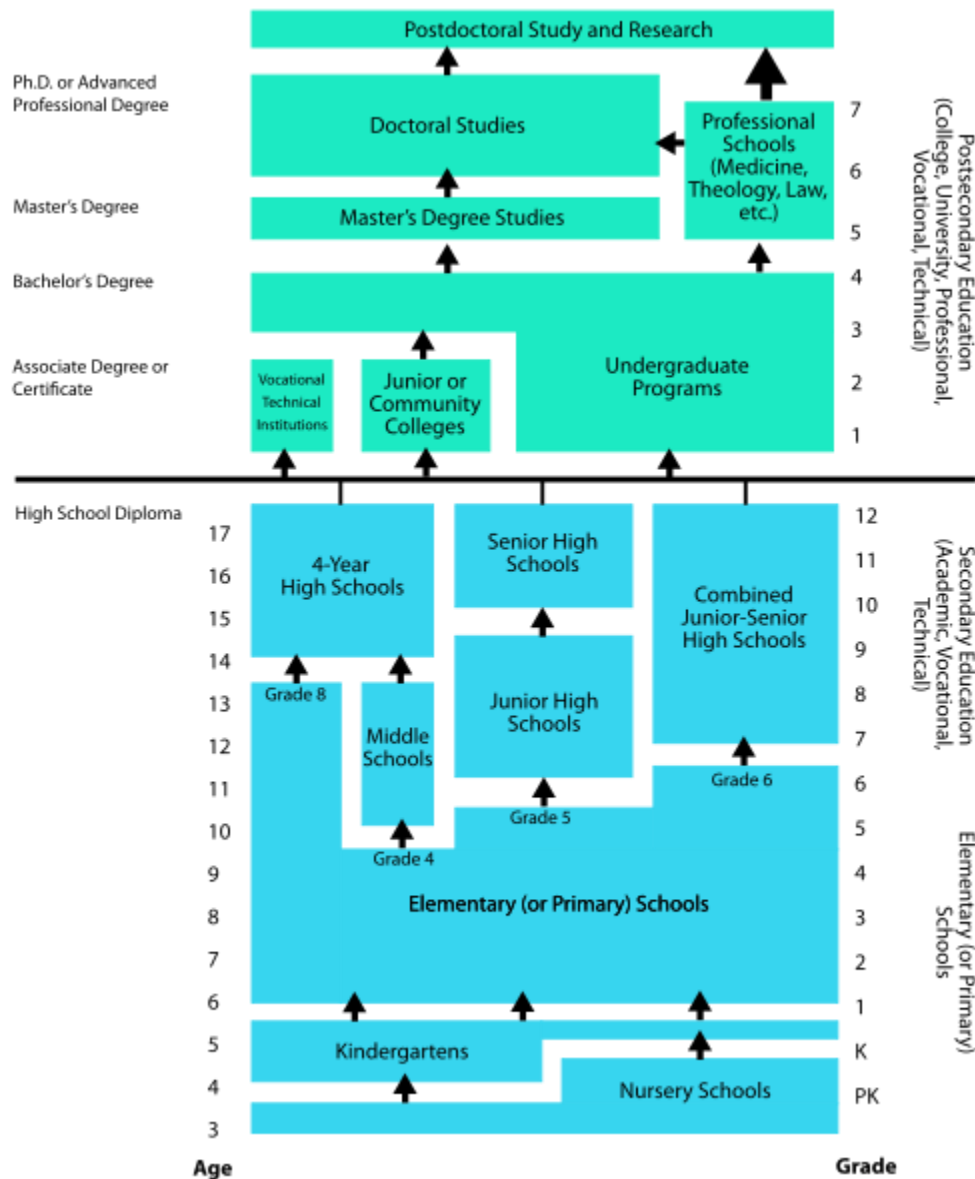


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Exhibit 1 is a basic chart that shows the formal levels of basic and higher education. The North Texas Aviation Education Initiative, sponsored by the North Central Texas Council of Governments (NCTCOG), focuses on developing education programs at all levels. A review of these levels is important as aviation career paths are developed.

Exhibit 1: Education Levels



Source: Institute of Education Sciences within the U.S. Department of Education



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In Appendix A the Aircraft Owners and Pilots Association provides a comprehensive listing of aviation career opportunities that suit many interests and backgrounds. Categories include the following:

- Pilot
- Airline and Airport Operators
- Airline and Airport Services
- Aircraft and Systems Maintenance
- Aircraft Manufacturing Occupations
- Scientific and Technical Services
- Law-Related Services
- Health Services
- Office Professionals
- Food Services

Exhibit 2 is a basic flowchart that simply presents how persons whose interests are aviation specific and non-aviation specific at the time they are embarking in higher education programs.



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Exhibit 2: General Career Path Flowchart



Source: Aviation Education Team

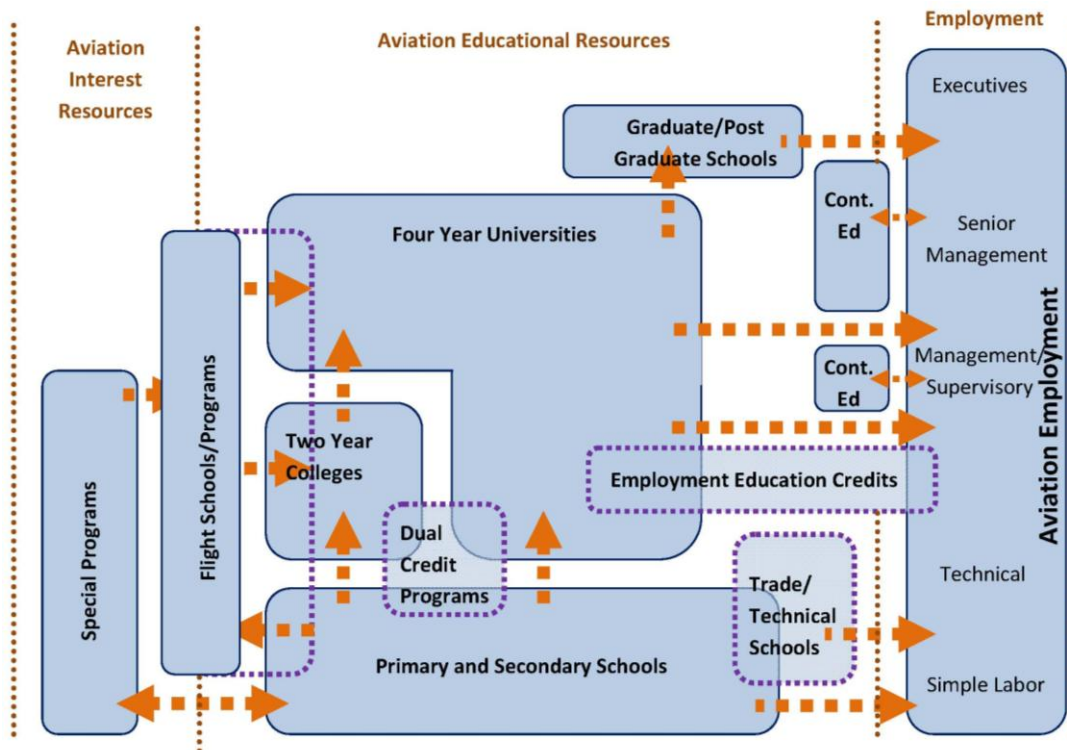


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Exhibit 3 serves as a more detailed flowchart than Exhibit 2 and illustrates how both paths could lead directly to a career in aviation, albeit coming from different directions and perhaps in a different aviation field than the original intent. Students initially enrolled in a professional flight program could find themselves engaged in airport operations as they discover airport management as a career alternative. Students in a non-aviation business program could end up working in aerospace manufacturing as a sales executive with direct ties to corporate flight operations.

Exhibit 3: Detailed Aviation Career Path Flowchart



Source: Aviation Education Team



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There is no set path for many of the ultimate career opportunities available in aviation. However, industries interested in developing a pipeline for staffing positions will generally look first for local and regional educational programs as a source for employable entry-level personnel. Even if their interests are somewhat parochial, industry support of an aviation academic program will strengthen the school's reputation as a conduit for well-paying jobs and having close ties to the industry. Industry will also generally contribute tangible and intangible resources to support their interests in higher education and skilled labor as well as professional training programs.

During the course of this study and based on extensive research, emphasis is on three career paths, each of which can lead to numerous types of jobs. These are:

- Professional Pilot,
- Aviation Management, and
- Aviation Maintenance Management.

C. PROFESSIONAL PILOT

Exhibit 4 demonstrates a simplified version of pathways to get to the career goal of a professional pilot., Exhibit 5 shows more details of how the most direct path in aviation education leads students towards employment as a professional pilot. Studies have shown that significant numbers of young people interested in aviation are primarily drawn toward a career as a professional pilot. Since a college degree (and in most cases, not necessarily an aviation-related degree) has served as a qualifier for an entry level position in the airlines, many young people elect to enter an aviation-related program such as aeronautical science that has a flight training option. These students are essentially learning to fly and receiving college credit for the experience. Many of these programs include in-depth courses such as aviation safety, security and management, in addition to other electives that may be offered.

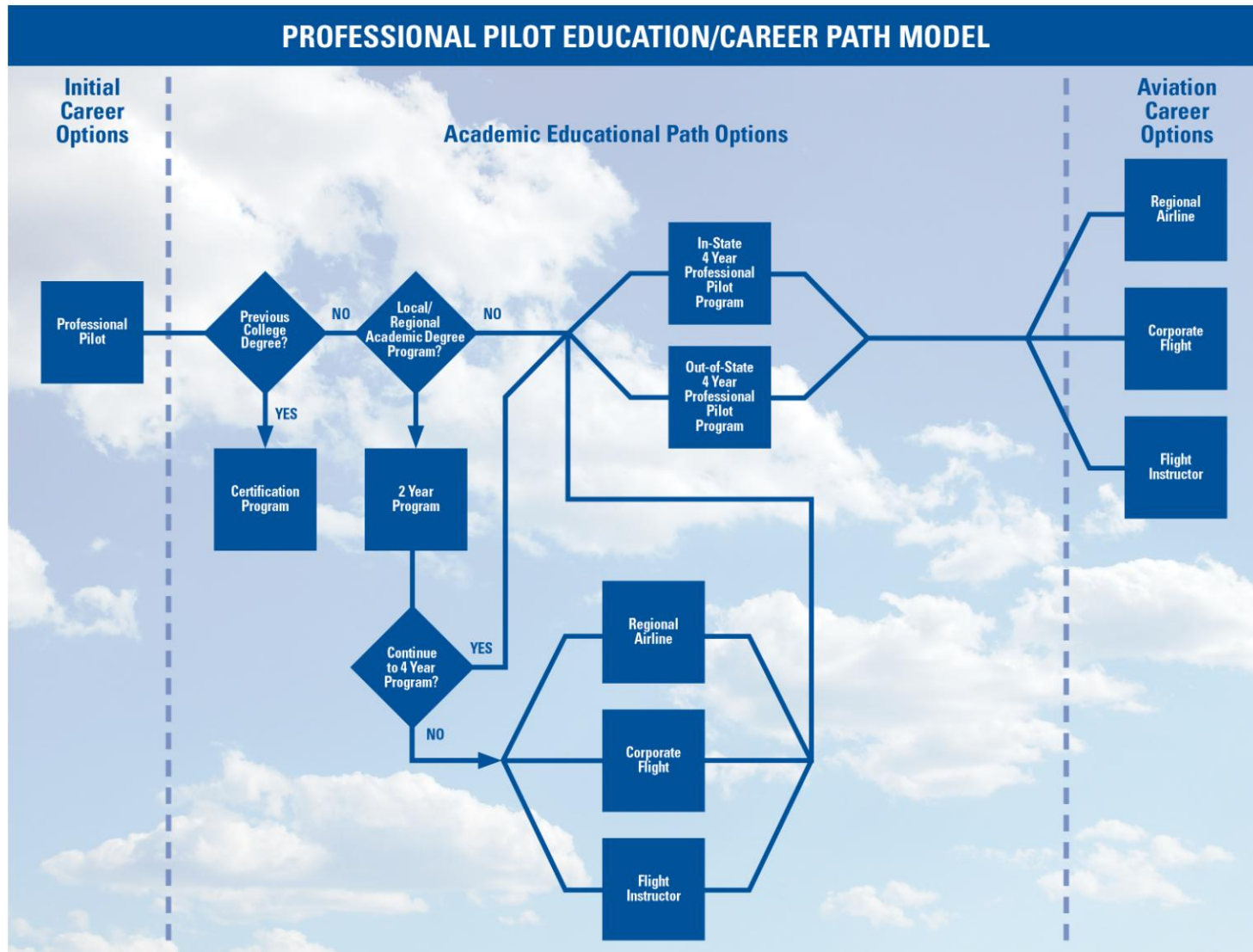
There are many two- and four-year programs available that have a professional pilot orientation. While in most cases they do not lead directly to an entry level position in the airlines, such a degree can offer graduates some flexibility in achieving their career goals. For instance, if a flight position is not immediately open at an airline, a dispatcher position might be available which could serve as a "foot in the door" and a networking opportunity.



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Exhibit 4: Simple Professional Pilot Pathway

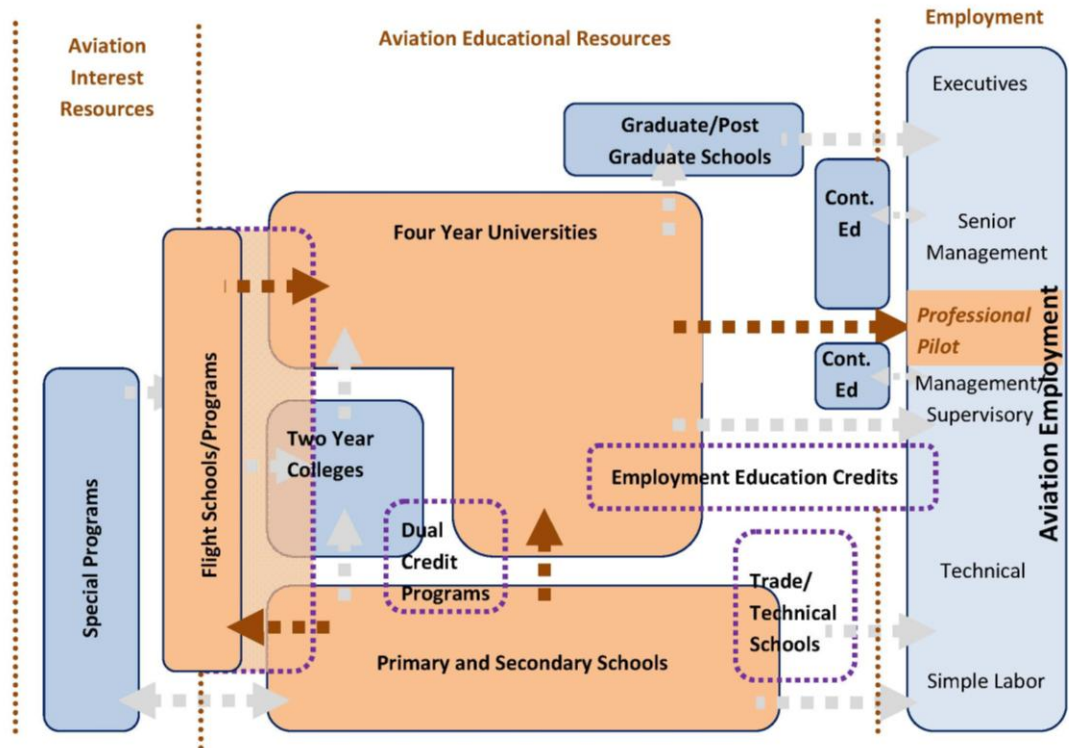




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Exhibit 5: Detailed Professional Pilot Pathway



Source: Aviation Education Team

In some cases, a specialized degree can also lead to a managerial position such as union representative, owner of a business as a second job and special project team member or leader. For someone who does not (or cannot) fly professionally, other aviation-oriented career paths are open. Because college level flight programs continue to remain popular in spite of airline industry financial turmoil, fierce competition for limited flying opportunities, low initial pay and other issues attest to the fact that there are many young people who will not be deterred from following their career aspirations.

D. AVIATION MANAGEMENT

As noted previously, pursuing an aviation management degree opens up many employment opportunities for graduates to work in a variety of positions at airports (commercial service and general aviation (GA) in management/administration and operations), airlines, fixed-base operators (FBOs), and governmental agencies. In addition, they may have opportunities in aviation-related positions in any number of non-aviation-specific industries. Example are a law firm that does aviation work, a public safety or security organization that operates aircraft, and an architectural, engineering or planning firm that works on airport projects.

While successfully entering a career in aviation management does not rely on a singular, prescribed course which must be followed, educational opportunities for students with a growing interest in these areas should be available to enhance their employment possibilities. In addition to general management and business courses, a solid foundation and background in the aviation industry is critical in understanding operations, stakeholders, and regulations and



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policies. The best opportunity to achieve this level of understanding is through an aviation management degree program at the college level.

Both associate degrees and bachelor degrees are available in aviation management. Pursuing an associate degree generally provides a basic level of understanding about aviation for the student and can be entry level access to some aviation employment opportunities. A bachelor's degree in aviation management provides students with a significantly greater knowledge base as well as access to employment in the industry at an entry-level professional level. Of the two scenarios, those holding bachelor's degrees will likely have access to additional opportunities and choices within a certain field as well as for advancement. Their broader and deeper understanding that comes with additional education will be more highly valued by prospective employers. This is not only for the additional aviation specific education but also that which comes with upper division courses in most college and universities. In some instances, an associate's degree in aviation could complement an individual who already holds a four-year degree in a non-aviation related field.

Of course, students enrolled having a non-aviation educational program such as business or public administration also have access to aviation employment. Pursuing a minor in an aviation-related field could also enhance their opportunities on the aviation management career track. Exhibits 6 and 7 demonstrate both a simple and detailed view that as career interests in aviation management evolve during a student's matriculation, the path toward successfully entering the career can be enhanced by having a program with courses to expand knowledge in these areas.

Example employment opportunities under the aviation management career path include such management and supervisory roles as:

Supervisory and Management Opportunities

- Airport Management and Operations
- Airlines – Management, Analysts, Operations, Dispatch
- Fixed Base Operator – Manager
- Government Entities – Air Traffic Control, Analyst, Planner
- Consulting – Management, Planning

Entry Level Opportunities

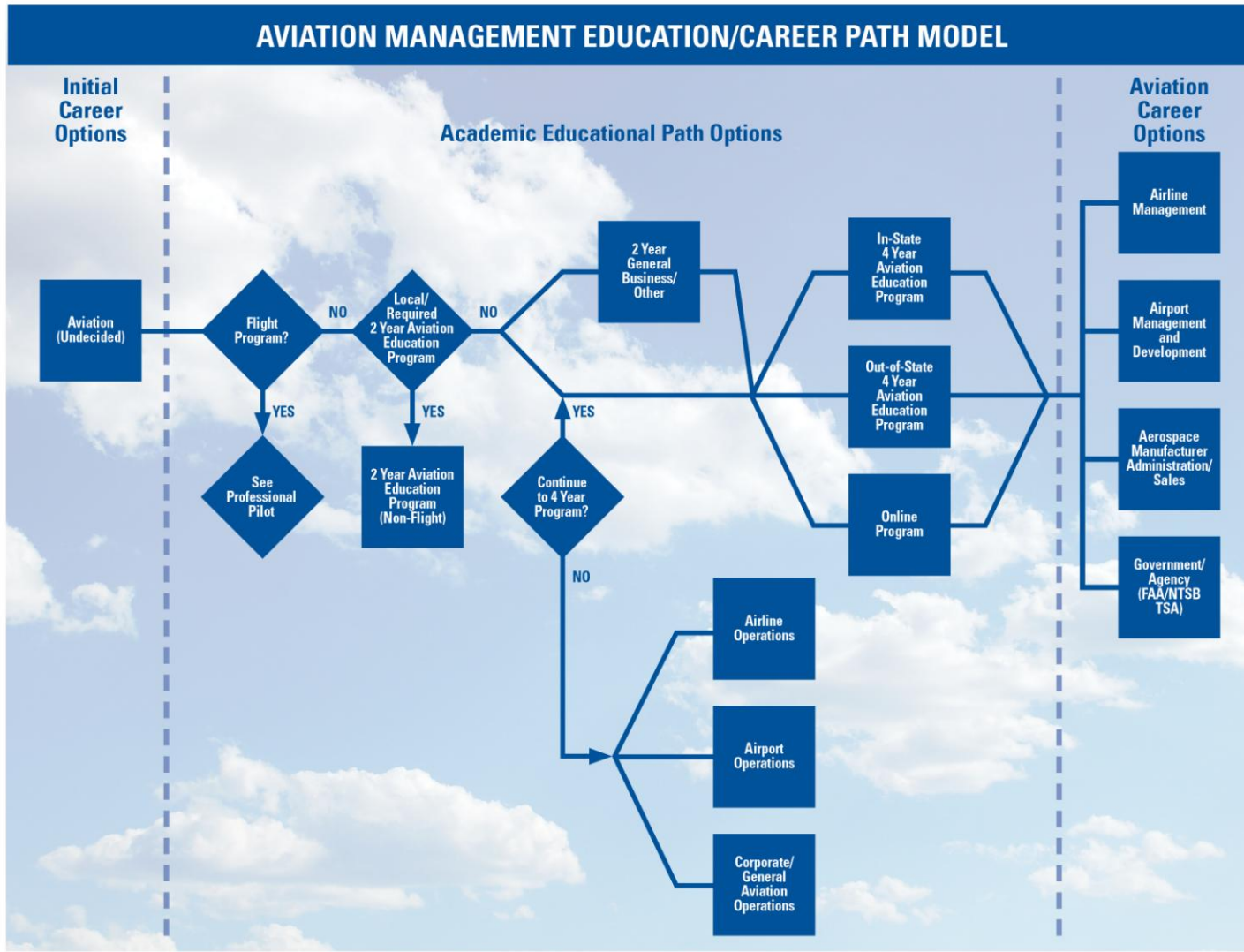
- Airport – Line and Office
- Airline – Line, Office, Customs Service
- FBO – Line, Fuel Manager
- Government Entities – Support Functions



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Exhibit 6: Simple Aviation Management Career Path

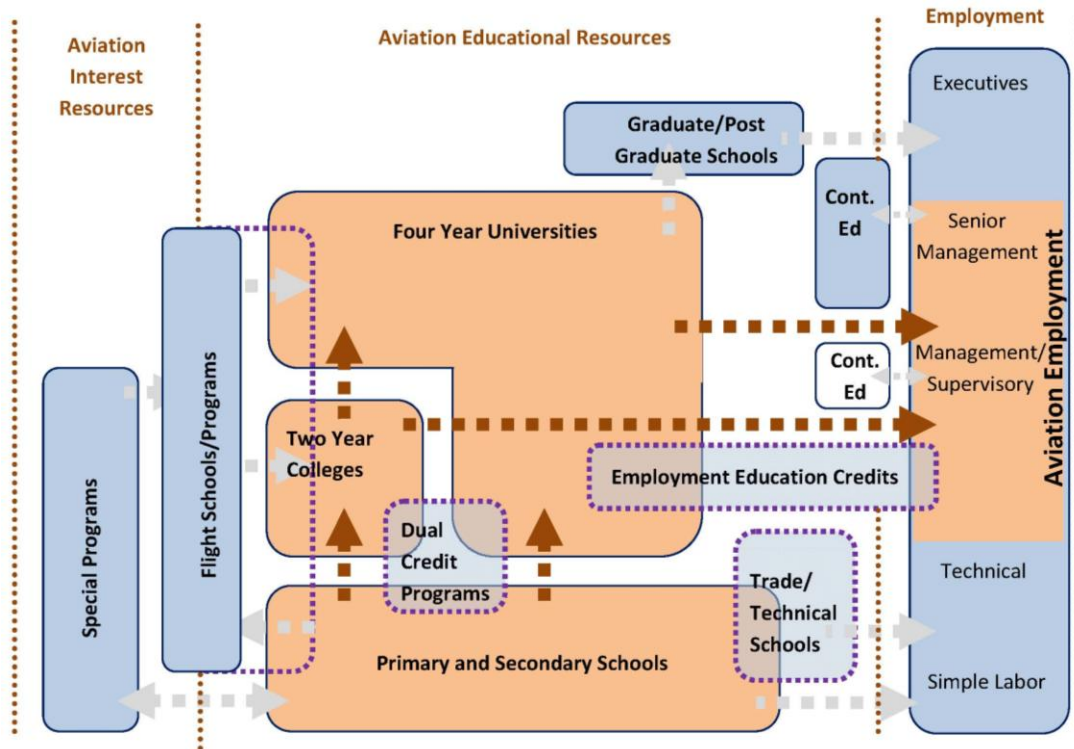




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Exhibit 7: Detailed Aviation Management Career Path



Source: Aviation Education Team

E. AVIATION MAINTENANCE MANAGEMENT

Aircraft and component maintenance is a significant part of the aviation industry. Employment opportunities as airframe and powerplant maintenance, repair, ground services and avionics technicians exist at all levels of the aviation field. In addition, a large number of jobs are available in the aviation manufacturing industry where such technical skills are in demand. Many of these jobs do not require four-year degrees.

However, additional opportunities exist for technically-skilled people who also possess a four-year degree. Aircraft and avionics technicians who are skilled in aircraft manufacturing, maintenance, and repair and are interested in supervisory, managerial and executive/professional roles within an organization can pursue a degree in aviation maintenance management. Opportunities for advancement, additional responsibilities, additional compensation and personal satisfaction generally increase with the level of education.



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Students pursuing a four-year aviation maintenance management degree have exposure to upper division aviation management, supply chain and general business courses, giving them a certain breadth and depth in their understanding of the various facets of the industry. Students pursuing aviation maintenance management programs would have access to employment opportunities for companies that offer aircraft and engine maintenance and repairs and overhauls (MROs) to airlines, air freight, charter operators, corporate flight departments as well as others. Additionally, supervisory or managerial roles are available in smaller maintenance/repair stations that cater to GA and corporate travel.

Employment opportunities also exist in the aviation manufacturing industry where a skilled technician with managerial skills and training can prove valuable to the company. In some cases, companies may have a desire that their technicians have degrees. This degree path can lead to employment with a company where the work may be more complex and rewarding. Private companies and some governmental agencies also hire this skill set for inspector positions which require technical knowledge and an ability to manage staff and interact with employees at all levels as well as the public.

Like other career paths, success in aviation maintenance management is not the exclusive domain of any particular educational background but falls primarily in the opportunities offered to students who elect to pursue such a field. Students at all levels, from incoming freshmen to experienced technicians with no college experience, can seek to advance their careers through associate and bachelor degree programs that have specific courses designed to address the industry's technical and managerial needs.

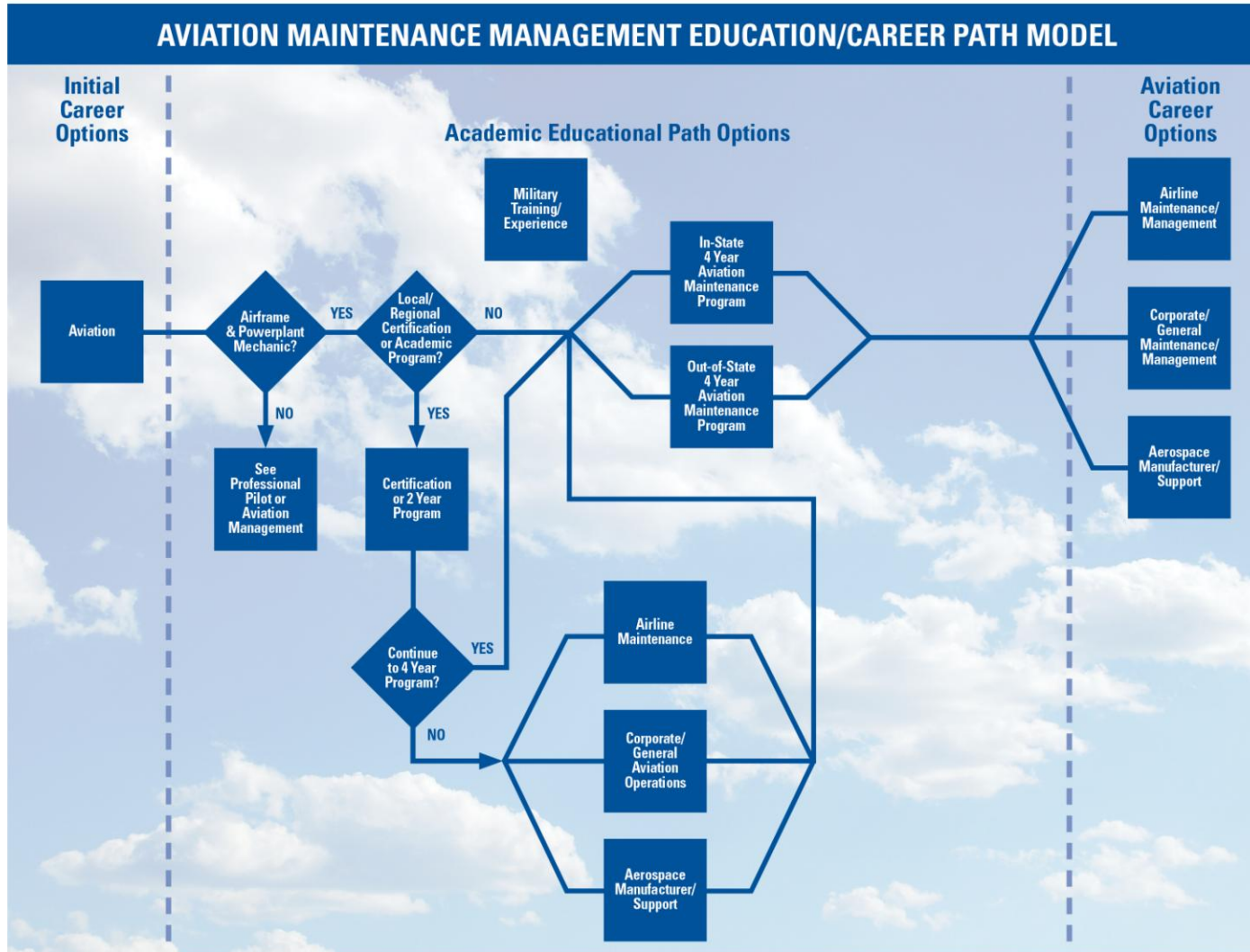
Exhibits 8 and 9 both illustrate in a simple and detailed view that if maintenance management becomes of interest to a student, a path can be made available to allow them to expand their knowledge base in areas important to the industry.



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Exhibit 8: Simple Aviation Maintenance Management Career Path

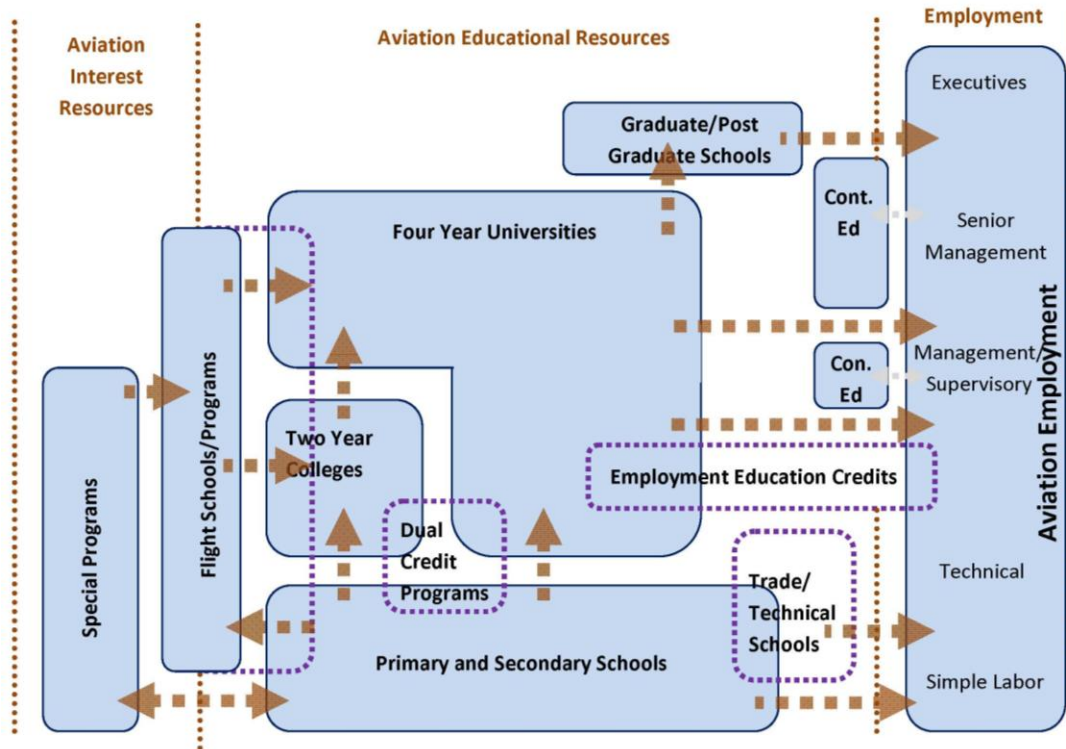




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Exhibit 9: Detailed Aviation Maintenance Management Career Path



Source: Aviation Education Team

F. SUMMARY

As stated earlier there are many paths for attaining a successful aviation career. Education plays an important role in achieving success but, more importantly, an education appropriate to the aviation industry empowers the student/graduate for gaining entry into their desired career field.

By providing aviation educational opportunities regionally, companies which are constantly looking for qualified and capable employees will enjoy access to a talented and motivated pool of candidates who are already established in the community. To that end, everyone wins—the graduate, the school and the industry.



AIRCRAFT OWNERS AND PILOTS ASSOCIATION
421 Aviation Way
Frederick, Maryland 21701
301-695-2000
www.aopa.org

Help Wanted!

CAREERS IN AVIATION

The aviation industry offers career opportunities to suit many interests and backgrounds. As aviation remains an integral part of our society, there will be a growing need for qualified personnel. AOPA provides this look at careers in aviation for you as you plan for your future.

CAREER TITLE	EDUCATION REQUIREMENTS	WHO EMPLOYS
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PILOT CAREERS

Agricultural Pilot	H.S. diploma, special training, and license	Agricultural operators, large farms
Air Traffic Reporting Pilot	College preferred	Radio & TV; traffic reporting companies
Major/National Airline Pilot	College preferred; most require 4-year degree	Major and national airlines
Regional Airline Pilot	College preferred; most require 4-year degree	Regional airlines
Helicopter Pilot	College preferred; most require 4-year degree	Helicopter operators, corporate flight departments
Corporate Pilot	College preferred; most require 4-year degree	Companies with flight departments
Air Taxi Pilot	College preferred	Fixed base operators, air taxi operators
Flight Instructor	H.S. diploma	Flight schools
Military Pilot	College degree	U. S. Armed Forces
Astronaut	Engineering, physical science, physics, or similar advanced degree	NASA

AIRLINE AND AIRPORT OPERATIONS

Airport Manager	College degree in airport management or business administration	Airports, airport authorities
Fixed Base Operator Manager	H.S. diploma; college degree sometimes preferred	Fixed base operators (FBOs)
Lineperson	H.S. diploma	Airports, airlines, FBOs
Station Manager	H.S. diploma; experience preferred	Airlines
Scheduling Coordinator	College degree preferred; experience helpful	Airlines
Flight Dispatcher	Dispatcher's license; college degree and experience preferred	Airlines
Air Traffic Controller	FAA training; college preferred	Federal Aviation Administration (FAA)
Safety Inspector	Engineering degree and/or experience as pilot or mechanic	FAA
Concession Workers	H.S. diploma	Airport concessionaires
Fire and Crash Rescue	Special training; college preferred	Medium to large airports
Ground Attendant	H.S. diploma	Airlines
Ramp Service Personnel	H.S. diploma	Airlines, airports, FBOs
Cabin Maintenance Mechanic	H.S. diploma, technical training	Airlines
Ramp Planner	H.S. diploma; experience preferred	Airlines

AIRLINE AND AIRPORT SERVICES

Customer Services Representative	H.S. diploma, business experience	Airlines
Ticket Agent	H.S. diploma, two years college preferred	Airlines
Reservations Sales Agent	H.S. diploma; two years college preferred	Airlines
Flight Attendants	H.S. diploma, special training; college pref.	Airlines
Baggage Handlers	H.S. diploma	Airlines
Sky Caps	H.S. diploma	Airlines
Cargo Handlers	H.S. diploma	Airlines, air freight companies
Air Freight/Cargo Agent	H.S. diploma, shipping experience	Airlines, air freight operators
Passenger Service Agent	H.S. diploma; experience helpful	Airlines

**CAREER
TITLE****EDUCATION
REQUIREMENTS****WHO
EMPLOYS****AIRCRAFT AND SYSTEMS MAINTENANCE**

Airframe <u>or</u> Powerplant Mechanic	H.S. diploma, technical training; degree pref.	Airlines, FBOs, private companies
Airframe and Powerplant Mechanic	H.S. diploma, technical training; degree pref.	Airlines, FBOs, private companies
Avionics Specialist	H.S. diploma, technical training; degree pref.	Airlines, FBOs, private companies

AIRCRAFT MANUFACTURING OCCUPATIONS (*Information courtesy Raytheon Aircraft Co.*)

Manufacturing Engineers	Bachelor of Science degree	Aircraft manufacturers
Electrical Installers & Technicians	H.S. diploma, Associate's degree	Aircraft manufacturers
Tool, Jig & Fixture Makers	H.S. diploma, vocational school	Aircraft manufacturers
Machine Tool Operators	H.S. diploma, vocational school	Aircraft manufacturers
Sheet Metal Fabrication	H.S. diploma	Aircraft manufacturers
Assemblers & Installers	H.S. diploma	Aircraft manufacturers
Quality Technicians	H.S. diploma, Associate's degree	Aircraft manufacturers

SCIENTIFIC AND TECHNICAL SERVICES

Engineers (Aeronautical, Aerospace, Civil, Electrical, Mechanical)	Engineering degree	Aircraft manufacturers, FAA, NASA
Meteorologists	Meteorology degree; experience preferred	National Weather Service, airlines, private weather companies
Cartographers	Cartography degree	NOAA, federal & state governments, private companies
Architects	Architecture degree	Airports, architecture firms
Technicians (Electronics, Radar, Navigation)	H.S. diploma, special training	FAA, independent contractors

LAW-RELATED SERVICES

Aviation Attorney	Law degree	FAA, airlines, governments, private law firms
Sky Marshal	H.S. diploma, police academy, law enforcement experience	FAA
Drug Enforcement Agents	College degree, special training; exp. pref.	Drug Enforcement Administration
Customs Agents	College degree	U.S. Customs
Security Officers	H.S. diploma, special training	Airlines, airports
Inspectors	H.S. diploma, special training	Construction companies, airport consultants, governments
Accident Investigator	College degree, industry experience	Nat'l Trans Safety Board, FAA, insurance companies
Security Specialist	H.S. diploma, law enforcement experience	FAA

HEALTH SERVICES

Flight Physician/Aviation Medical Examiner	Medical degree	Airlines, NASA, FAA, military, private practice
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OFFICE PROFESSIONALS

Travel Agents	H.S. diploma, special training	Travel agencies, government
Secretaries/Administrative Assistants	H.S. diploma	Industry-wide
Information Systems Specialist	College degree	Industry-wide

FOOD SERVICES

Food Preparers	H.S. diploma, health certificate required	Airlines, airline caterers, airports
Operations Supervisor	College degree in field	Industry-wide