

COMMERCIAL AIRCRAFT LEASING AND ITS BOOMING COMPLEXITIES

By

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Dedicated to the person who inspired me to dream, who was and is responsible
for my efforts to study and always finish my goals, my father:

J. Manuel Jimenez Reyes

August 17, 1948 – February 4, 2004

“Your word is a lamp to my feet
and a light to my path. I have sworn an oath and confirmed it,
to keep your righteous rules. I am severely afflicted;
give me life, O Lord, according to your word! Accept my freewill offerings of
praise, O Lord,
and teach me your rules.”

(Psalm 119:105-108, ESV)

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ABSTRACT

Commercial leasing has become increasingly popular among airlines during the past two decades. Airlines are more readily choosing leasing versus buying aircraft due to the fast changes of the global economy and turmoil of events around the world. This increase in leasing practices will require a group of professionals that are educated specifically in the field of aviation management, the requirements of which are often not easily defined. Therefore; this study is designed to explore at the graduate level the academic world of aviation management with the specific goal of determining the topics vital to success for the future of aircraft leasing. Courses that are currently being covered within U.S. aviation management master's degree curricula are reviewed, but moreover, so are topics necessary for future aircraft leasing and finance that are not currently covered. To accomplish the study fourteen (14) universities were chosen for this evaluation and compared against a prototype curriculum found within the industry. Results of the study indicate that although most of the reviewed universities do offer other related courses that are useful to the field of aircraft leasing and finance, most do not offer courses designed specifically for the current and growing needs of the field of aircraft leasing.

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CHAPTER I - INTRODUCTION

Aviation is an enormous industry, and flying has become a very common way to travel as opposed to other means of transportation. Many people prefer taking a flight rather than taking a boat if going overseas, or a car when going on a long trip. With the increase of flying, “aviation management” has become a huge sector within aviation business, as well as an economic giant.

The aviation industry encompasses the Federal Aviation Administration, National Transportation Safety Board, military aviation, airport authorities, general and business aviation, ground service organizations that provide maintenance and fueling, and manufacturing. Within all aspects of the aviation industry there is the need for aviation managers. Aviation management has become not only a term of interest to airlines and airports, which was historically the case, but scholars have seen the need to come up with a neutral definition due to the needs of the industry. Management is the process of reaching organizational goals by working with and through people in the organization or other organizational resources (Kaps & Phillips, 2005). In 2005, based on extensive research and a wide variety of sources (Oxford Dictionary, WorldNet, Wikipedia, the Marine’s Museum Glossary, and definitions used by the Department of Transportation) Kaps & Phillips combined their fifty plus years of business experience in challenging management positions with three major

airlines, and recommended the definition of aviation management as: The study and practice of general business processes used to achieve targeted objectives in the aviation industry.

During the past two decades, with thousands of planes entering the market, new airlines emerging, and aviation leasing becoming increasingly popular, more and more personnel has been needed, and not in just the traditional form of pilots, mechanics or flight attendants. The recent demand is for people who understand aviation business, such as contracts and other administrative matters within the industry. While related to aviation management, these are sometimes viewed as general areas and individuals often are hired without previous experience in aeronautics. The aviation related training is done once those individuals are hired. Certain companies will hire employees and send them to training to learn what is needed to operate in the aviation industry at a managerial or administrative level. As the industry of aviation continues to grow ever faster, especially in areas related to leasing, it is vital to understand the complexities of leasing and how it is transforming aviation management.

Literature Review

The aviation market has been growing rapidly for decades. Catastrophes such as the Gulf War, 9/11, or the financial crisis only had minor effects on global air traffic (KGAL Group, 2016). Due to the rapid growth in aviation, operating leases have become a common form of investment in the current market. Since

the 1970's the growth in the aircraft leasing market has outpaced that of the global aircraft fleet (KGAL Group, 2016). Aviation lessors have been encountering a steady increase in demand from international airlines. The general growth of the global aviation market has been well documented in studies by International Air Transport Association (IATA), Airbus, and Boeing (KGAL Group, 2016). The rapid growth is due to the fact that flying can hardly be replaced as a means of transportation, and due to the continuation of urbanization around the world (KGAL Group, 2016). IATA forecasts anticipate a doubling of the global aircraft fleet by 2034, and according to Boeing an estimated demand for 38,000 new aircraft is expected for the next twenty years (KGAL Group, 2016). The increase projected is estimated to be from 22,510 aircraft operating in 2015, to 45,240 in 2034 (see Figure 1). This growth alone would mean 22,730 new airplanes entering the market, with a total of 5.6 trillion in USD of investment (KGAL Group, 2016). Figure 1 shows the number in terms of the categories or new replacements, growth and those that will remain.

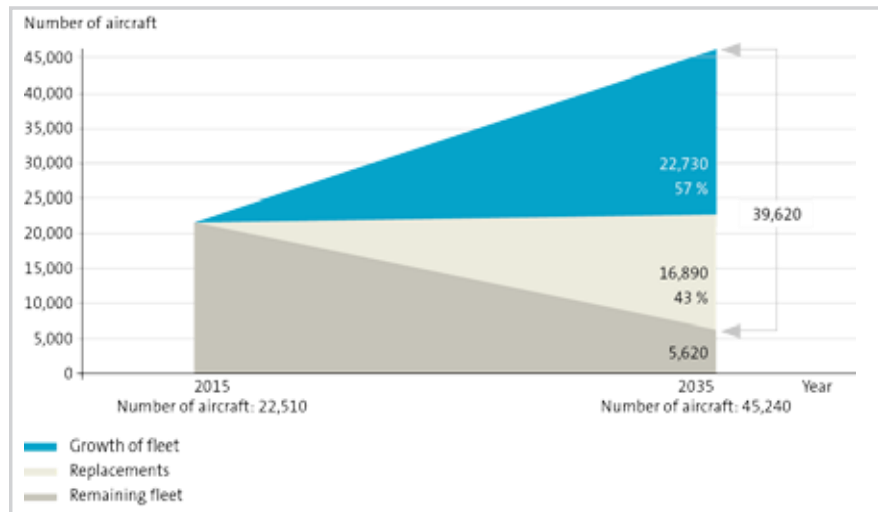


Figure 1: *Development of Global Commercial Aircraft Fleet Forecast (Boeing Capital Corporation, 2016)*

Boeing is expecting passenger air traffic to increase by an annual average of 5% until 2034 (KGAL Group, 2016). Leasing has become more common as emerging economies rise in Asia and South America and the rise in global trade and industrial production also continues to increase with a number of new low cost carriers entering the market (KGAL Group, 2016). All of these trends combined are and will continue to be some of the reasons why in 1980 only 100 out of 3,980 aircraft in total were under lease and in 2012 the number was 7,390 aircraft out of 19,594 being leased (see Figure 2).

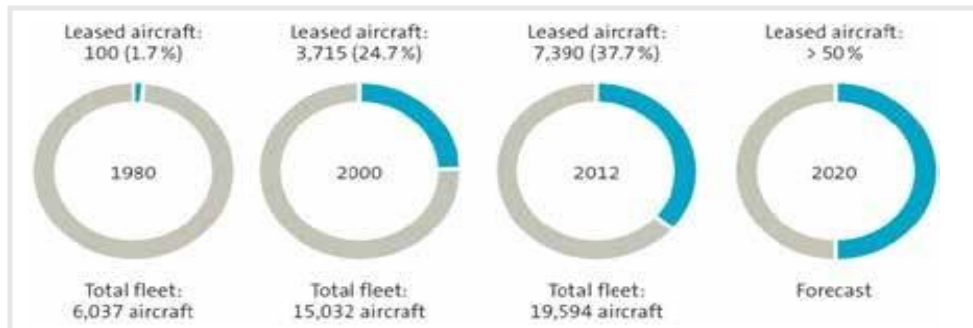


Figure 2: *Development of Operating Leasing for Aviation (Boeing Capital Corporation, 2016)*

The trend towards aircraft leasing has become popular due to volatile competitive rivalries, and the frequent changing nature of the business of aviation (KGAL Group, 2016). Competition and change restrict both the financial capacity of airlines and their ability to raise debt. Therefore, in recent years most airlines are relying on leasing aircraft rather than buying as a way of doing business (KGAL Group, 2016). Leasing is an alternative to the huge up front capital that is required when purchasing aircraft (KGAL Group, 2016). According to the International Council on Clean Transportation (ICCT), the need to expand fleet sizes to accommodate the growth in air passengers has led to an increase of aircraft leasing companies and financial instruments that aim to provide debt financing. The airline's business is to operate by the most effective method. Airlines have as a primary focus of assuring their passengers' safety, but it is also in the airline's interest to reduce costs (Kwan & Rutherford, 2015). One of the

ways to reduce costs is by keeping the assets they use in acceptable condition, and leasing provides that flexibility for the airlines. Leasing is most common among startup airlines, especially when they have a small amount of capital and the operation of the airline is way beyond the capital they have available. They see the most effective method of beginning operations by leasing their planes rather than buying them. Also, airlines that have a large amount of capital sometimes prefer to use that cash for other purposes within the organization rather than buying airplanes. Purchasing an aircraft is extremely expensive. By having the airplanes under a lease, it is easier to upgrade them (Kwan & Rutherford, 2015).

Another reason leasing has become so appealing to airlines is because it helps the airlines deal with fuel efficiency costs. According to a study done by the Transatlantic Airline Fuel Efficiency Ranking, those airlines operating a relatively old fleet such as Boeing 757's burned an estimated 26% more fuel. Newer airplanes are better in terms of fuel costs. Airlines can save millions of dollars since newer aircraft are more efficient with fuel. Fuel is one of the biggest costs to operating, and with many new environmental laws, airlines have received pressure to reduce fuel burn in the air. According to the Transatlantic Airline Fuel Efficiency Ranking, airlines that have invested in new, advanced aircraft such as Boeing 787-8s are more fuel-efficient than airlines that use primarily older aircraft like Boeing 747-400s or the Airbus 340 (Kwan & Rutherford, 2015). When airlines operate at the bottom of the ranking in fuel efficiency, they may go under

investigation for increasing emissions and spending more on fuel than necessary. Thus, a major factor to the increase in leasing is that, “Poor overall airline fuel efficiency is highly correlated with the use of older aircraft,” (Kwan & Rutherford, 2015, p. 22). For airlines to adopt new methods to reduce costs is key, and leasing gives them that flexibility without having to spend all of their capital. Another factor that is triggering the economic performance of leasing is that there are major policies under development to reduce carbon emissions from the aviation sector. Newer aircraft have shown very high fuel efficiency; consequently, fuel is the reason even prominent airlines are leasing airplanes (Kwan & Rutherford, 2015).

The benefits of leasing encompass more than just finances, yet the process comes with new challenges and aspects of aviation management that must be well understood to operate efficiently. International Air Transportation Association (IATA) lists in their *Guidance Material and Best Practices for Aircraft Leases* that one of the most important parts in leasing is the aspect of maintaining the asset value. The asset value depreciation must be in line with other similar aircraft under similar conditions. The asset needs to be transferable without any significant burden, and protection must be placed against events of default. Understanding all of these pieces requires a full understanding of aircraft leasing practices. Leasing is a contract that allows for the use of an asset, which in this case are airplanes that possess a substantial cost, and everything related to those

matters is a long process. Aircraft assets have numerous rules and risks. The high stakes in leasing an airplane is not only from its cost, but also the many possible laws that could be violated in the process when not operating under rules and parameters set for lessors and lessees. There are two types of leases, designated wet lease and dry lease. A wet lease is a lease where the lessor provides an aircraft with crew, maintenance and insurance known as an Aircraft Crew Maintenance Insurance lease. The aircraft is then operated under the Air Operators Certificate of the lessor. A dry lease is a lease where the lessee provides crew, maintenance and insurance. In this case, the aircraft is then operated on the Air Operators Certificate of the lessee (IATA, 2015).

Most operating airlines and aircraft leasing companies that lease commercial aircraft use dry leases. This type of lease requires meticulous detail and a large amount of paper work. Unfortunately, standards by the aviation authority are not often sufficient to satisfy all stakeholders involved with an aircraft lease. It is a global market where aircraft owners and traders want to incorporate requirements from other stakeholders. This sometimes results in an array of unnecessary requirements and confusion, even on paper work alone (IATA, 2015).

The number one hurdle for both parties, the lessees and the lessors, is safety. Understanding the basics of aircraft maintenance reserve development and management as a lessor is important. It can ensure airlines operate their aircraft under their requirements and that no major catastrophe occurs for either party as a

result of maintenance issues. Usually a lease agreement will specify what maintenance events need to be covered by the lessee and what is to be covered by the lessor.

Yet, the contractual matters related to maintenance are always a subject of intense negotiation. Some airlines may choose to lease their fleet from a U.S based company while operating their planes on another country, and finance them in another. Rules and policies change from airline to airline and can vary greatly from country to country as well as jurisdiction to jurisdiction. The amount of detail that goes into the business matter of leasing airplanes requires strong business skills and basic technical knowledge in aeronautics (IATA, 2015).

The risks associated with leasing are similar to those of any type of investment; what happens when things go wrong? An operating lease is subject to many pitfalls when not properly handled. It has its unique contract language, the risk of repossession, and obtaining all of the data details of the contract is not always possible. In one way leasing is a method that facilitates airline operations, but it is also a new sector bringing with it a new set of challenges which needs equipped individuals to handle those tasks (IATA, 2015). The growing need to understand leasing has been seen around the globe in recent years. The University College of Dublin (UCD) saw the need to create a program that focuses exclusively on Aviation Leasing. UCD partnered with five of the biggest companies that deal in leasing; Aercap, Avolon, Ge capital, KPMG, Safran, and

SMBC aviation capital. The partnership emerged because Ireland is considered a hub in the industry, and many aircraft leasing companies have an office located in Ireland. Patrick Blaney, chairman of aviation leasing at UCD, described the urgency to prepare students in obtaining a detailed understanding of the financial processes and procedures associated with the aviation finance sector, including suitable risk assessment and aircraft valuation, relevant accounting, and taxation issues that have strong legal implications (UCD, 2017). Other organizations such as Aviation Week & Aviation Trading and Events have begun to make leasing part of their seminars around the world. In the recent Maintenance Repair Overhaul conference, that took place in Latin America, Aviation Week Network hosted Ahmad Zamany, Vice President of Technical Operation with Copa Airlines, to talk exclusively about negotiating a lease contract, the pitfalls of leasing, and what those involved in leasing should be looking for when working in a contract (Aviation Week, 2017).

Some roles in aircraft leasing such as pricing, credit, financial accounting, structure finance, contract management or some technical management inspectors do not require heavy aeronautical skills. Aspects of leasing have transformed some traditional business practices of aviation management. Aircraft leasing is a lucrative investment that has been growing and sought after, but the need to prepare students in those areas in academia remains. A degree in aviation management should be the appropriate tool to prepare students with the basic

needs and knowledge of aviation leasing. The need to prepare professionals with new sets of skills in different areas of aviation management is not new. The industry is constantly evolving and growing. In 1992 Airbus saw the need to prepare those individuals involved with operating Airbus aircraft. As the industry evolved, they stretched their training into other areas of management and acknowledged that engineers may be designated to drive financial solutions, requiring them to have business aviation skills. In recent years, with the growth of aircraft leasing, Airbus designed specific courses that can be taken in their school (Airbusiness Academy) or customized for employees (Seymour, 2016). The curriculum teaches about the links between manufacturer, airline and leasing company and about how to improve working relations among them. They examine aircraft operating lease strategies and management, and learn about specifics such as Islamic finance overviews and Japanese operating leases. The students learn about the different currency exchange rates that affect the costs and operation of the lease, all in aim to prepare them with skills to operate globally.

The overall awareness of leasing is growing and preparation is available by various organizations including universities and colleges. According to the data published by Airfinance journal there are at least 50 top aircraft leasing companies around the world whose job is exclusively to buy, lease and rent airplanes to airlines (see Figure 3). They vary in the number of airplanes they

manage and also the type of aircraft they lease; some only lease new aircraft while others only lease used aircraft.

Rank #	Aircraft Leasing Company	# Planes
1	Gecas	1608
2	AerCap	1279
3	BBAM (Incl NBB & Fly)	413
4	SMBC Aviation Capital	393
5	CIT Aerospace	313
6	AWAS	295
7	Aviation Capital Group	273
8	BOC Aviation	256
9	Air Lease Corporation	251
10	Nordic Aviation Capital	249
11	Macquarie AirFinance	176
12	ICBC Leasing	173
13	Avolon	166
14	ORIX Aviation	148
15	Aircastle	141
16	Avmax	136
17	CDB Leasing	120
18	Pembroke	119
19	Jakcson Square Aviation	110
20	MC Aviation Partners	92
21	VEB-Leasing	84
22	Skyworks Leasing	76
23	Hong Kong Aviation Capital	76
24	Falko	67
25	DAE Aerospace	62
26	Apollo Aviation Group	61
27	Cargo Aircraft Management	57
28	Castlelake	55
29	Investec	52
30	ASL Aviation Group	51
31	BOCOM Leasing	49
32	Sky Holding	49

33	ALAFCO	49
34	CALC	47
35	Century Tokyo Leasing Corporation	46
36	Aircraft Purchase Company	45
37	Amentum Capital	45
38	Elix Aviation Capital	44
39	Accipiter	44
40	Guggenheim Aviation Partners	43
41	Ilyushin Finance Corporation	43
42	Aerocentury	40
43	VTB Leasing	40
44	Jetscape	38
45	Doric	38
46	GOAL	36
47	Goshawk Aviation	35
48	DVB/Deucalion	35
49	Aergo Capital	35
50	Avation	31
	Total	8,184

Figure 3: *Top 50 Lessors by Number of Aircraft*

The list of aircraft leasing companies and the number of planes each leasing company manages will continue to grow, it is something that will become more common. Airlines still continue to buy and own airplanes, but are choosing to have a mix of leased and owned as a way to deal with economic turmoil (Air Finance Journal, 2015).

There seems to exist a large disconnect between the actual needs of the market and the academic programs that equip students for careers. Although this is, perhaps, of more concern for safety-heavy programs such as aviation, the same can be said for almost all undergraduate and postgraduate programs across a

variety of disciplines. This point derives from a multitude of academic and scholarly sources devoted to the exploration of higher education and its adherence to the needs of the industry.

The problem of quality in higher education is a widely-discussed topic. It is interesting from a variety of viewpoints: the ability of universities and other higher learning institutions to translate the curriculum into knowledge that is applicable in the workplace, the adherence of these institutions to the specific needs of industries they are training students for (in this case, the airline industry) and the preparation of students to meet the challenges that await them once they graduate. The dominant stance on this issue is that, while most western industrialized countries adopt the work-ready doctrine when creating their curriculum, there exists a substantial amount of evidence that most undergraduate students lack the most basic skills necessary to be employable upon leaving the university (Azevedo, 2012)

The problem of skill and knowledge deficiency is not limited to a single country or a single industry. According to Brzinsky-Fay (2007), this is partly defined by the inability of the policy makers to formulate a coherent approach to the problem. Instead, the focus lies on the culpability of institutions that ill-prepare the students. The authors indicate that the only real solution for this problem lies in the establishment of transition sequences, which act as a preparatory stage for the transition between the education period and the

employment period. In a sense, this would modulate and replenish the knowledge and the skillset of the recent graduates in such a way that allows them access to the workforce but without the pressure of employer expectations, not in terms of labor, but in terms of knowledge. A good way of understanding this approach is as a form of internship within a particular industry that allows young adults to seamlessly transition while acquiring the skills necessary for their future career. In the case of aviation management, this could be a considerable benefit for students and companies, as it is evident that the current curriculum offered by universities does not meet the necessary criteria for employment in this field (Brzinsky-Fay, 2007).

Knigh & Yorke state that emphasizing the persistent pressure on institutions of higher learning to promote programs and practices that increase the possibilities of employment immediately upon graduation. However, there are frequently opposing views on the expected outcomes of education programs, especially in highly specific fields such as aviation management, which indicate that the knowledge attained during education is inadequate. This means that the candidates which graduate from this field and start their careers in aviation leasing, for example, will have to go through the process of training and learning which often takes years, rather than months, to be able to participate in full. Since the primary goal of companies is to make profit and expand, it is reasonable to assume that this type of re-education is not beneficial for them, which is why

these companies tend to employ seasoned staff rather than young graduates (Knight & Yorke, 2003).

To prevent, or rather to modify this, the authors propose that the institutions which prepare students for future careers in highly specialized fields take on a more proactive approach, namely by taking into account the many real-life scenarios and possibilities within the industry they are teaching about. Similarly, the attempt to distinguish between the actual and theoretical application of knowledge only serves to diminish the employment opportunities, because even those materials that are industry specific tend to be more theory oriented and lack an environmental perspective (Knight & Yorke, 2003).

The combined expenditure of corporations and education institutions on management in 2002 was more than \$2.2 trillion. This speaks volumes about the importance of highly skilled individuals who can occupy management positions, especially in specialized niches such as aviation management and leasing management. The problem, however, lies in the conception of higher education. After the shift from faculty based to student based education in the early 2000s, students were exposed to a number of new methods of learning especially given the abundance of new electronic resources which mediated the system and allowed easier access to information. This, however, had an unexpected effect because students learning became focused on the theoretical aspects rather than a combination of theory and practice that would inform and educate students in the

most efficient way. Despite the sudden rise in the number of business and management students, institutions and graduates, the much-needed shift in the curriculum is yet to happen (Friga et al., 2003).

The problem of business and management education in the US has been analyzed in depth by a large number of scholars. One of the perspectives, offered by Pfeffer & Fong (2004) indicates that despite the predominant influence and superior value of business education in the US when contrasted to most other nations, there exists a large, and as yet unsolved problem. The authors argue that instead of focusing on the development of actual management potential in students, the institutions of higher learning teach them how to increase their earning potential. This is of no use in a real-world scenario where companies need experts who can tackle actual management problems and overcome them, thus requiring additional training and years of preparation in the case of recent graduates. The authors attribute this problem to the lack of professional ethos on the part of the institutions, as they seem more focused on attracting students and their fees than on actually providing knowledge that would be worthwhile in the job marketplace (Pfeffer & Fong, 2004).

According to Harmon & MacAllum (2003) the three key characteristics of a truly market-responsive higher education system are resource allocation for training, business partnerships and quick adjustments to market events and specific needs. However, the authors find that there is a very small number of

institutions which operate in accordance with these principles and find several reasons for this. The first, and the most obvious reason is the fact that the number of students in the US, and globally increased exponentially in the late 1980s and 1990s. These place a burden on the institutions as they have to offer the same amount of knowledge to all students, which is often impossible to do for reasons (such as time, space, and financial commitment). The second part of the matter is the belief that as more students enroll in colleges and universities, these institutions create programs that are loosely based on the actual market needs, these programs exist to provide a certificate and charge tuition, but have limited real-world value in terms of marketability (Harmon & MacAllum, 2003).

Statement of the Problem

Aircraft lessors are expected to increase their share of new delivery financing, from close to 40% today to 50% by the middle of the next decade (Forsberg, 2013). Aviation is not subject matter that can be learned overnight. The main concern that technical managers face in aircraft leasing is that personnel that come from other areas lack the urgency that most people in aviation know exists when it comes to safety and government rules. It is very important for institutions to prepare students for those jobs rather than the companies having to prepare employees for the job, or for students going through an aviation management program needing to spend more resources on further training to qualify for a job after graduation. Peak Performance Recruitment Limited (PPR

LTD), mentions that to get a job in the aircraft leasing industry, a person must understand that leasing is nothing like an airline. An aircraft lessor is an investor in aircraft, not an operator. Therefore, the staffing needs are much smaller and tends to be very commercially focused. The companies in leasing may consider candidates without prior aircraft leasing experience in areas such as pricing, credit, financial accounting, structured finance, contract management and some technical management. However, the constant conflict recruiters face is that it is not realistic to expect to be considered for a role with an aircraft leasing company without prior experience, such as sales, marketing, trading, legal counsel, and technical directors. Without relevant experience, there will be fewer opportunities available and a move to enter into the sector might be a long-term goal rather an immediate transition (PPR LTD, 2017). The issues of aviation management degrees to enter into leasing are not necessarily at the business level but rather aimed at subjects such as “Commercial Aircraft Airworthiness Management, Commercial Airlines Revenue Management, Airline Fleet Planning, because Airline Maintenance & Engineering are very important aspects of leasing contract negotiations,” (D. Restrepo, personal communication, March 8, 2017).

Since 1992 AirBusiness Academy based in Toulouse, France has focused on aviation management, leadership, and operational management. They offer valuable development programs to clients and others in the industry, especially in the area of leasing. The company offers programs for those who come to the

industry from other backgrounds but also for those that already possess MBA's but lack the aviation management skills related to leasing or managing aviation assets. In recent years AirBusiness Academy has begun to work with universities from around the world, such as the University of China, to meet the needs of the industry (Airbus, 2017). The AirBusiness Academy was described by Industrial Aeronautics (INDAER) as one of the most complete programs to prepare those who desire to enter into business management or leasing. According to the Director of Innovation and Business Development Daniel Restrepo from Industrial Aeronautics, the only down side to the AirBusiness program is that most of the courses are in France, are expensive, and are offered sporadically. He believes universities or other companies such as Boeing should have similar programs, or include some of these skills as part of their training (D. Restrepo, Personal communication, March 8,2017). D. Restrepo works extensively in the areas of leasing consulting in the Americas, and believes there are urgent needs to understand the business. The courses offered from AirBusiness include 12 in aviation management, 9 in operational management, and 2 in leadership.

The USA currently has 14 long-standing and well known universities that offer aviation management programs, making these schools the perfect platform to address the necessary skills for positions in aircraft leasing. On average, most graduate programs require 30-36 credits to graduate. The number of courses taken at the graduate level are usually about 10 plus a thesis or capstone project. These

14 universities are listed on the Experimental Aircraft Association website as institutions offering aviation management courses. Those 14 universities will be the group chosen to do the evaluation and comparison to answer the following research questions.

Research Questions

This research study will seek to answer the following questions:

- 1) What topics necessary for future aircraft leasing and financing employees are currently being covered in U.S aviation management master's degree curricula?
- 2) What topics necessary for future aircraft leasing and financing employees are currently not being covered in U.S aviation management master's degree curricula?
- 3) What percentage of course content offered by AirBusiness Academy in its aircraft leasing program is currently offered by graduate aviation management programs in the US?

CHAPTER II - METHODOLOGY

The method for this study involved using the courses offered by AirBusiness Academy as a prototype to investigate what topics for future leasing and aviation finance jobs are both present and not present in U.S graduate aviation management degree programs. AirBusiness Academy was chosen because, based on the analyses of various organizations that offer this type of training, it was evaluated to be the most complete. The U.S graduate programs were chosen from universities and compared to what is offered by AirBusiness Academy. The AirBusiness program has long history of engagement in developing people in aeronautics, which has allowed the program to gain insight into the management needs of professionals working in this dynamic industry. Their courses help to explore areas that will improve job performance and encourage further learning in a short period of time (Airbus 2017). AirBusiness Academy currently has 23 courses open, and others that they can customize according to the needs of various corporations and professionals. For this study, the 23 open courses were chosen (see Appendix A). They were categorized by content, and in accordance with their substance. In many cases two courses were formulated into one. Airbusiness courses are shorter in length than university offerings, so by doing this condensation a better estimate of courses was obtained to do the comparison against those from the universities. These courses from AirBusiness are 12 in

aviation management, 9 in operational management, and 2 in leadership. The three categories were included to have a complete selection and obtain valid results. The courses were condensed based on their similar description in topic content. The following table, Table 1, describes the condensed curriculum, along with a description of the consolidated course content.

Table 1

Airbusiness Academy Courses Condensed and their Description

Training courses from Air-business Academy/Airbus	Course Description
Aeronautical Supply Chain Mgmt.	Understand the objectives and benefits of Supply Chain Management
Failure Modes and Effects Analysis	Learn a proven method for reducing or eliminating risks. Prevention is better than cure; Understand the background and purpose of FMEA within an aeronautical context and prepare, conduct and monitor your own analysis.
Lean Training and Coaching	Experience lean concepts with the added value of identifying problem areas in your workplace and treating those specific problems both during the course and afterwards through on the job coaching.
Mastering International Negotiations	Provides the framework and guidance for the planning and conduct of successful mutual gain business negotiations in an international context.
Agile Innovation and How to Lead Cross Functional Teams	Grasp this opportunity to discover leading practices to put innovation at the center of your business and focus your project on the rapid delivery of business value. How to manage your cross-functional team, allowing people with different ideas, perspectives, and expertise to voice their ideas and find creative and innovative solutions to your business decisions.
Arline Marketing & Fleet Planning	Overview of fleet planning management, from traffic forecasting to network planning and fleet definition. Learn how to structure the fleet planning process and how to analyses alternative fleet solutions. Reviews marketing principles and clarifies marketing concepts used in the airline industry. You will assess how different marketing strategies are applied and their significance in the operation of an airline.
Aircraft Asset Management & Cabin	Examine the main issues of re-marketing, operating & financing second-hand aircraft. Learn how aircraft cabin is evolving, according to design, market needs & competitive issues.
Aircraft Finance	Improve understanding of airline financial performance & aircraft financing tools & techniques from the perspectives of airlines, lessors, bankers & manufacturers.

The Key to Successful Project Mgmt. in Aerospace	Gain an in-depth and comprehensive knowledge of the theory, processes, tools and methodologies of project management within the aerospace industry.
Aircraft Operating Lease Market	Enhances your knowledge of an aircraft operating lease and its value to all parties concerned: aircraft manufacturer, lessee and lessor. Compares in detail different leasing and financial structures.
Aircraft Customization vs. Standardization & Evaluation	Discover how airlines evaluate competing aircraft types based on technical and economic criteria. Examines the different aspects of aircraft design and aircraft product requirements from airlines along with the implications of pre-delivery aircraft customization vs. standardization.
Commercial Aspects of Aircraft Maintenance	Identifies the drivers in maintenance costs evaluation and analyses arguments concerning maintenance matters in commercial discussions.

Once the condensation was done, the number of courses from Airbus Academy was 12, a number that was suitable to match against the curricula required by U.S universities. On average, most graduate programs require 30-36 credits to graduate. The number of courses required for an aviation management degrees at most universities is 12 for those who offer the option of “No Thesis” and 10 for those who require thesis or capstone project. All of the courses from the universities selected were compared against the curriculum of Airbus.

Participants

The universities were chosen from the list that the Experimental Aircraft Association has on their website. Only those offering aviation management degrees or related curricula at the graduate level were chosen. According to the EEA there are one hundred and six colleges and universities that offer aviation-related programs; from those only the ones that list aviation management

programs or similarly named programs at the graduate level were picked. The number of graduate programs on the list was about twenty-five, but in recent years some of those programs were closed and others are not in aviation management. After making a close analysis of the actual universities that offer aviation management programs, the number was 14, and that group was the one utilized for this study. The list of universities chosen can be seen in Table 2 below:

Table 2

List of Universities and their Aviation Management Degree

University	Degree Name
Arizona State University	M.S Tech in Aviation Management and Human Factors
Delta State University	Master of Commercial Aviation
Embry-Riddle University	MBA in Aviation Management
Everglades University	M.S Degree in Aviation Science concentration in Business Administration
Florida Institute of Technology	Master's in Aviation Management
Lewis University	Master of Science in Aviation and Transportation
Lynn University	MBA in Aviation Management
Middle Tennessee State University	M.S Aviation Administration concentration in Aviation Management
Oklahoma State University	Master of Science, Aviation and Space
Park College St Louis University	Master of Science in Aviation
Purdue University	M.S in Aviation and Aerospace Management
University of Central Missouri	Master's Degree in Aviation Safety
University of North Dakota	M.S Aviation
Vaughn College	Master of Science Airport Management

Instruments

After the universities were chosen detailed curricula for each university program was obtained through their websites. Some universities have more than

one master degree in aviation but for the purpose of the study only the ones listed as aviation management or similar were picked. A table was created per university with their curricula along with a description of each of the courses. In this way, the number of courses and their content would be compared against those from Airbus Academy, and also against other universities in the study. An example of a university table can be seen in Table 3 below, with the additional university tables provided in Appendix A.

Table 3

University Curricula Sample and its Description

Aviation Business Core	Name	Description
BA 511	Operations Research	The study of scientific approaches to decision making. Through mathematical modeling, it seeks to design, improve and operate complex systems in the best possible way.
BA 514	Strategic Marketing Management in Aviation	The course is designed to provide the student with an overview of marketing and marketing strategies in the planning and operations of the organization
BA 517	Accounting for Decision Making	Designed to understand financial statements, statement analyses, and how use accounting information to plan and control business decisions.
BA 518	Managerial Finance	This course builds on the concepts of the time value of money and introduces applications involving the valuation of bonds and stocks, and using net present value and other investment criteria to make investment decisions.
BA 520	Organizational Behavior, Theory and Applications in Aviation	This course examines organizational behavior with emphasis on fundamental concepts for managerial practice. Special topics include organizational leadership as well as quality and conflict management.
BA 523	Advanced Aviation Economics	Comprehensive analysis of airline economics. Principles of macro and microeconomics will be introduced.
BA 635	Business Policy and Decision Making	The course is designed to equip students with analytical tools for cracking cases studies by scanning the business environment and coming to a decision making.

Table 3 Continuation

Aviation Management		
BA 604	International Management and Aviation Policy	The course addresses international management and aviation policy through the examination of major trends and issues challenging the aviation manager. Cross-cultural situations are evaluated from the perspective of interpersonal relationships in a diverse and domestic and foreign environment
BA 609	Airline Operations and Management	The course provides a broad overview of the airline industry and creates awareness of the underlying marketing, financial, operational and other factors influencing airline management.
BA 645	Airport Operations and Management	The course provides a broad overview of the airport industry and creates awareness of the underlying marketing, financial, operational and other factors influencing airport management.
Ba 646	Air Cargo Logistics Management	The course will give the student the opportunity to learn the knowledge and skills required for an exciting and challenging career in airlines, air freight forwarders, express couriers and general logistics and supply chain management.

Each university's curriculum was pulled into the format of Table 3, with all its required courses and electives. The Airbus Academy curriculum in Table 1 was compared against each university in the format of Table 3. The evaluation was based on the fact that Airbus Academy is focused on commercial aviation; thus, topics that involve interaction between airline staff and the manufacturer were key to find if the content of AirBusiness Academy was listed on the universities' curriculum. The key terms used were "Airline Marketing," "International Aviation or Negotiations," "Leasing or Leasing Market," "Safety or Risk Assessment" "Maintenance," "Aviation or Airline Finance" "Supply Chain Management or Logistics," and "Aviation Economics." Each university was evaluated from the aspects of general aviation, flight safety, safety management, business and business management. For the most part some universities do not go into detail in the commercial aviation

sector, which made it easy to differentiate which courses from institutions matched those from Airbus Business Academy and which did not. Some courses from Airbus Business Academy only matched part of the topics listed in courses offered by universities, but it was evident that the general scope of the course prepared individuals with similar skills. Therefore, in some instances a “Y” for yes was assigned to that course even if the topics did not match 100%. After the key terms mentioned were used a close analysis of the description for each course offered by the universities was done to properly decide on the matching. The cross tables in chapter 3 are also provided in Appendix A with notes as to where in the universities’ curricula the courses offered by Airbus Business Academy are found. The courses might have a different title and the description may vary but when the general scope of the course prepared students with the same overall skill a “Y” was assigned.

Research Design

The curricula of each university were analyzed from three different angles, 1) what percentage of those courses offered by Airbus Business Academy were offered by the university, 2) what courses of those offered by Airbus Business Academy were part of the universities’ curricula, and 3) What topics or courses were missing in the universities’ curricula that were included in the Airbus Business Academy program.

The courses to be compared were chosen and listed on a table next to each university chosen for the study. A “Y” for yes was given if that course was found in the university’s curricula and a “N” for no was granted if it was not found. After each University’s curricula was compared against the AirBusiness Academy, based on those results, a score was given to the universities’ program. A percentage was calculated by dividing the number of courses the university offers that match those required by the AirBusiness Academy. The score helped to both compare the schools against each other, but also how they are performing against Airbus’s Academy, and what percentage of the courses by Airbus Academy are being taught by universities. After the analysis was done for each university program, a grading distribution was created to assess all of the programs together as well as individually to determine how the institutions are doing compared to what the leasing industry requires. The distribution helped to determine which universities’ program are more compatible with that of the aviation leasing industry.

Procedure

Each university’s required courses for their master’s degree in Aviation Management were obtained through their website. These were pulled into a table, along with each course description. The same process was performed for the Airbus Academy. After a list was generated per university and the assessment was done for all courses, each university course was compared against

those from AirBusiness Academy. A ‘Y’ was entered next to the university courses that substantially matched those listed by Airbusiness Academy, and a ‘N’ was entered if that course was not part of the list. Table 4 below is the format of the table that was utilized for course comparison. The Tables with the results of this analysis are found in chapter 3.

Table 4

Format Sample Table

Training courses from Air-business Academy/Airbus	University1	University2	University3	University4
Aeronautical Supply Chain Mgmt.	Y	N		
Failure Modes and Effects Analysis				
Lean Training and Coaching				
Mastering International Negotiations				
Agile Innovation and How to Lead Cross Functional Teams				
Arline Marketing & Fleet Planning				
Aircraft Asset Management & Cabin				
Aircraft Finance				
The Key to Successful Project Mgmt. in Aerospace				
Aircraft Operating Lease Market				
Aircraft Customization vs. Standardization & Evaluation				
Commercial Aspects of Aircraft Maintenance				

CHAPTER III – DATA ANALYSIS

The 14 universities indicated in Table 2 in the previous chapter were chosen based on their aviation management related graduate degree as described on their website. The titles for each degree vary by school.

The four tables below describe in detail how each school was matched against each course offered by Air Business Academy, and how these courses were categorized. Each university was analyzed course by course and a list of every school curriculum and their courses required for their aviation management degree is provided in Appendix A.

Table 5

Universities' Comparison Against Airbus Academy Course Topics

Training courses from Air-business Academy/Airbus	Arizona State University	Delta State University	Embry-Riddle University	Everglades University
Aeronautical Supply Chain Mgmt.	Y	N	Y	Y
Failure Modes and Effects Analysis	Y	Y	N	Y
Lean Training and Coaching	N	N	Y	N
Mastering International Negotiations	N	N	Y	N
Agile Innovation and How to Lead Cross Functional Teams	N	Y	Y	Y
Arline Marketing & Fleet Planning	Y	Y	Y	Y
Aircraft Asset Management & Cabin	N	N	N	N
Aircraft Finance	Y	Y	Y	Y
The Key to Successful Project Mgmt. in Aerospace	Y	Y	Y	N
Aircraft Operating Lease Market	N	N	N	N
Aircraft Customization vs. Standardization & Evaluation	N	N	N	N
Commercial Aspects of Aircraft Maintenance	N	Y	N	N

Table 5 Continuation

Training courses from Air-business Academy/Airbus	Florida Institute of Technology	Lewis University	Lynn University	Middle Tennessee State University
Aeronautical Supply Chain Mgmt.	N	N	N	N
Failure Modes and Effects Analysis	Y	Y	N	Y
Lean Training and Coaching	N	N	N	N
Mastering International Negotiations	N	Y	Y	Y
Agile Innovation and How to Lead Cross Functional Teams	Y	Y	Y	N
Arline Marketing & Fleet Planning	Y	Y	Y	N
Aircraft Asset Management & Cabin	N	N	N	N
Aircraft Finance	Y	Y	Y	N
The Key to Successful Project Mgmt. in Aerospace	Y	Y	Y	Y
Aircraft Operating Lease Market	N	Y	N	Y
Aircraft Customization vs. Standardization & Evaluation	N	N	N	N
Commercial Aspects of Aircraft Maintenance	Y	N	N	N

Training courses from Air-business Academy/Airbus	Oklahoma State University	Parks College St Louis University	Purdue University	University of Central Missouri
Aeronautical Supply Chain Mgmt.	N	N	N	N
Failure Modes and Effects Analysis	N	Y	Y	Y
Lean Training and Coaching	Y	N	Y	N
Mastering International Negotiations	N	N	N	N
Agile Innovation and How to Lead Cross Functional Teams	Y	N	Y	Y
Arline Marketing & Fleet Planning	Y	N	N	N

Aircraft Asset Management & Cabin	N	N	N	N
Aircraft Finance	Y	N	N	N
The Key to Successful Project Mgmt. in Aerospace	Y	Y	Y	N
Aircraft Operating Lease Market	N	N	N	N
Aircraft Customization vs. Standardization & Evaluation	N	N	N	N
Commercial Aspects of Aircraft Maintenance	N	N	N	Y

Training courses from Air-business Academy/Airbus	University of North Dakota	Vaughn College		
Aeronautical Supply Chain Mgmt.	N	N		
Failure Modes and Effects Analysis	Y	Y		
Lean Training and Coaching	Y	Y		
Mastering International Negotiations	N	N		
Agile Innovation and How to Lead Cross Functional Teams	N	N		
Arline Marketing & Fleet Planning	N	Y		
Aircraft Asset Management & Cabin	N	N		
Aircraft Finance	Y	Y		
The Key to Successful Project Mgmt. in Aerospace	Y	Y		
Aircraft Operating Lease Market	N	N		
Aircraft Customization vs. Standardization & Evaluation	Y	N		
Commercial Aspects of Aircraft Maintenance	N	N		

Table 5 above provides the comparison for the universities; Arizona State University in its overall curriculum, which is made up of ten courses, only matches five courses of those offered by Airbus Academy. Arizona State has one of the smallest requirements of courses for a master's degree because its aviation management graduate program is an extension of their undergraduate

degrees. Delta State University, which has a curriculum made up of ten courses plus a thesis, has six of its courses match those taught by Airbus Academy; Embry-Riddle Aeronautical University, which contains eleven courses in its curriculum, matches seven courses, and Everglades University, which has eleven courses as part of their curriculum matches five courses taught by Airbus Academy. Florida Institute of Technology also has one of the smallest curricula and requires only 30 credits instead of 36, which is what most universities require. Their curriculum matches six topics of those taught by Airbus Academy; Lewis University matches seven topics, Lynn University matches five topics and Middle Tennessee State University matches four. Oklahoma State University matches six topics, Parks College St Louis University matches two topics, Purdue University matches four topics, the University of Central Missouri matches three topics, the University of North Dakota matches five topics, and Vaughn Colleges matches five topics taught by Airbus Academy. A calculation was generated to determine what percentage of courses offered by Airbus Academy were also part of the universities' curriculum, as can be seen in Table 6. The number of assigned Y's was added per university and divided by the number of courses offered by Airbus Academy ($\#Y/12$).

Table 6

Percentage of Airbus Academy Content Matched by University

University	% Of Airbus Academy Content Matched
Arizona State University	42%
Delta State University	50%
Embry-Riddle University	58%
Everglades University	42%
Florida Institute of Technology	50%
Lewis University	58%
Lynn University	42%
Middle Tennessee State University	33%
Oklahoma State University	50%
Parks College St Louis University	17%
Purdue University	33%
University of Central Missouri	25%
University of North Dakota	42%
Vaughn College	42%

The percentages help to determine what percentage of course content offered by Airbus Academy in its aircraft leasing program is currently offered by graduate aviation management programs in the 14 universities. It also gives a comparison among themselves as universities. The chart shows that 36% of the total number of schools matches the Airbus Academy program topics by 50% or more and 64% of them match the topics by less than 50%.

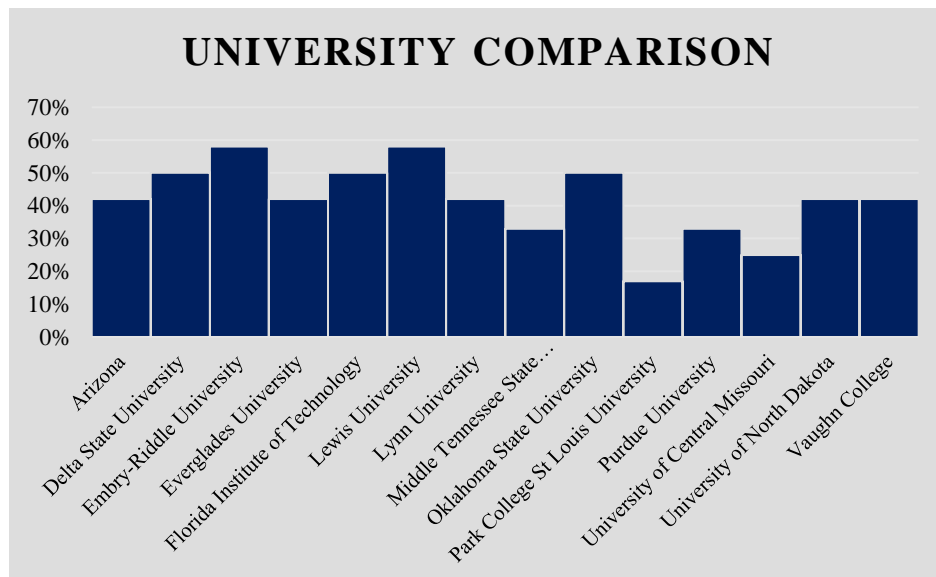


Figure 4: University Comparison

Figure 4 lists all of the universities aligned and shows how the universities compare against each other, and how they differentiate in content. Lewis University matches about 58% of Airbus Business Academy curriculum versus Park College St Louis University that only matches about 17%. The mean percentage of matching content was 41% with a standard deviation of 3%.

CHAPTER IV – DISCUSSION

The primary research questions of this study were to explore the academic world in aviation management at the graduate level to find out what topics necessary for future aircraft leasing and financing employees are currently being covered in U.S aviation management master's degree curricula, and what topics necessary for future aircraft leasing and financing are currently not covered. In order to do this study, both gathering all of the information necessary to answer the research questions, and finding a valid aviation leasing training program to make a comparison to was necessary. As a program viewed as a standard by those who benefit from it within the aviation management industry, AirBusiness Academy curricula was utilized to compare 14 graduate level degrees in aviation management. An additional research question was to find out what percentage of the course content offered by AirBusiness Academy in its aircraft leasing program is offered by graduate aviation management programs in the US.

Research Question 1 Analysis

The first research question was: What topics necessary for future aircraft leasing and financing employees are currently being covered in U.S aviation management master's degree curricula?

Table 7 below shows how many institutions have courses covering the topics offered by Airbusiness Academy. The most frequent topics offered by

Airbusiness Academy that are also offered by universities are; The Key to Successful Project Management in Aerospace, Aircraft Finance, Failure Modes and Effects Analysis, Airline Marketing & Fleet Planning, and Agile Innovation and How to Lead Cross Functional Teams.

Table 7

Number of Universities Offering Airbusiness Academy Topics by Course

Training courses from Air-business Academy/Airbus	Number of Universities Offerings Comparable
Aeronautical Supply Chain Mgmt.	3
Failure Modes and Effects Analysis	11
Lean Training and Coaching	4
Mastering International Negotiations	4
Agile Innovation and How to Lead Cross Functional Teams	9
Arline Marketing & Fleet Planning	9
Aircraft Asset Management & Cabin	0
Aircraft Finance	10
The Key to Successful Project Mgmt. in Aerospace	12
Aircraft Operating Lease Market	2
Aircraft Customization vs. Standardization & Evaluation	1
Commercial Aspects of Aircraft Maintenance	3

By evaluating the selected aviation management master's degree programs offered in the U.S at a course by course level, the research question regarding how many courses in aircraft leasing are being covered by U.S institutions as part of their aviation management curriculum was answered. From the findings, only one university offers a course entirely about aircraft leasing as part of their master's aviation management degree requirements, while one additional university has

such a course as an elective option. This is referring exclusively to courses with the name “aircraft leasing.” As indicated in Table 7 above, there are other courses being covered in most universities that are useful in the area of aircraft leasing, but when it comes to courses with the term “leasing,” only two examined institutions have this as part of their electives or requirements. However, the participants offer courses with topics such as “International Management and Aviation Policy,” “Contemporary Issues and Trends in Aviation,” and “Aviation Economics.” These topics are directly related to leasing and are also a large part of the Airbusiness Academy curriculum. One school in particular offers a certificate in aircraft leasing, but not as part of their Aviation Management Degree. The fact that this is part of their aviation management curricula but not included in their aviation management degree or even required as an elective sends a message that the school does not feel the need to include those courses as part of their aviation management degree. The school offers those courses as a one year certificate program in partnership with International Society of Transport Aircraft (ISTAT) Trading and it consists of the following topics; aircraft leasing, risk management, aviation legal framework, aircraft funding, maintenance reserves, leasing negotiation, and transaction modeling (ERAU, 2017). The university specifically states that the certificate is designed for students who have completed an undergraduate degree in business, accounting, finance or economics, or related transportation fields of study, and are looking for a

rewarding and challenging career in the aircraft financing, leasing and other ISTAT member industries.

Research Question 2 Analysis

The second research question was: What topics necessary for future aircraft leasing and financing employees are currently not being covered in U.S aviation management master's degree curricula?

The one topic not covered at all by universities was Aircraft Asset Management and the topic Aircraft Customization vs Standardization and Evaluation was only covered by one university. These two topics are part of aircraft leasing and aviation management but are not as high an importance as others. The one course that is offered by most aircraft leasing commercial training programs, but missing by most universities is "Supply Chain Management." Only 3 out of the 14 participant universities offer the course "Aeronautical supply chain management" or "Supply chain management," meaning 11 universities are not covering the topic. The course is of high importance due to the logistics that are involved in aviation in a global economy. The other course that is offered by Airbus Academy which is considered very important, so it was surprising that only 3 universities cover the topic is "Commercial Aspects of Aircraft Maintenance" which had 11 universities not covering it as part of their aviation management degree. The course is of high importance because as stated by Lufthansa Technik "they are expecting for individuals with aviation management

to have at least a basic understanding of the aspects of aircraft maintenance” (Corey Licurse, personal communication, March 5,2016). Finally, for two other important topics directly related to aircraft leasing, “Mastering International Negotiations” and “Aircraft Lease Market,” the number of universities not covering those topics was relatively high. Ten universities currently do not offer the topic of international negotiations, and 12 universities currently do not offer the topic of the aircraft leasing market.

Research Question 3 Analysis

The third research question asked: What percentage of course content offered by AirBusiness Academy in its aircraft leasing program is currently offered by graduate aviation management programs in the US?

While the percentage of courses offered by institutions can be seen in Table 6 in Chapter 3, overall five universities offer 50% or more of the aircraft leasing course content offered by AirBusiness Academy in their programs. This number is out of the 14 participants, meaning it accounts for almost 36% of the participants. The percentage is significant because it shows that universities’ focus primarily on the operational aspects of aviation. Hence, a large percentage of all the participants’ curriculum is heavy in general business courses, and the other in general aviation and aviation safety. Less focus is placed on courses such as “Asset management,” and “Commercial Aspects of Aircraft Maintenance.” Only 3 out of the 14 participants offer “Aircraft Maintenance” as part of their aviation

management degree. The number is of particular concern due to the important role that aircraft maintenance plays in everything pertaining to aviation. Yet, the answer as to why so few schools offer the course could be that they do not expect those students with an aviation management degree to be involved in areas directly related to maintenance, but rather on the administrative areas of aviation.

Recommendations

As mentioned in chapter one, the term “aviation management” itself has been debated and the term has been defined as “the study and practice of general business processes used to achieve targeted objectives in the aviation industry,” (Kaps & Phillips, 2005). It is with this general terminology that perhaps the dilemma has not only been to define what aviation management is, but also to have definition of what a degree in aviation management should be. Some schools have a well-balanced curriculum of business aviation, airline operations and aviation safety. However, other schools have a high percentage of general business and a few aviation courses, all under the same title of aviation management. Institutions being able to choose the courses according to what the school feels is best is nothing to argue, but the knowledge that students attain from a well-balanced aviation-based curriculum appears to far outweigh those that have a heavy core curriculum in general business. When companies hire individuals with aviation management degrees, they likely assume this person can do the job with the least possible amount of training. They expect those with

aviation management degrees to have knowledge in the intricate details of aviation paperwork, general aviation safety, airport and airline operation, a full understanding of aviation finance, and how aviation maintenance works (Restrepo, personal communication). Out of the 14 institutions examined, 9 of them offer less than 50% of the content offered by the Airbusiness Academy. This finding is of interest because it reflects that most schools' primary focus is still on preparing students for areas in aviation such as airport and aviation transportation in general, but their curricula leave out some dynamics of commercial aviation out that have been evolving over the years. Examples of those areas are aircraft leasing, maintenance, and international negotiations. Those areas have been changing primarily due to technology, the economy becoming more global than ever and other external factors such as environmental regulations.

Information was found about some universities around the world expressing the urgency they feel is out there to prepare students at the graduate level with aviation management skills, especially as it pertains to aircraft leasing. However, within the U.S most literature related to aircraft leasing is about how aircraft leasing is growing, what a great investment it is and its many complications. Most training related to aircraft leasing in the U.S is done through corporate training after hire. Unlike other countries, the U.S has plenty of degrees in aviation management as part of their undergraduate programs, which most

likely include a very diverse and balanced curriculum and provide most of the skills, including those not addressed at the graduate level.

Limitations

Aviation management seems to have a broad definition that covers many aspects of the industry. The limitations arise from what should be included as part of aviation management and how big is the market for those who desire to learn that field. The limitations to this study is that it was done at the graduate level. Individuals at the graduate level are expected to have a basic knowledge in one area as part of their undergraduate degree. Students who begin to study aviation management and already possess an undergraduate degree in aeronautics would still benefit from a Master's degree with heavy general business. It is when students come from different backgrounds or desire to attain an aviation management degree to enter into general aviation fields that some of the degrees would not fully equip them. Therefore, the aviation industry has felt the need to start programs like the one utilized for this research Airbus Business Academy, all in aim to meet a gap that exists. Yet, those programs have a down side because they are offered randomly and spread around the world. The AirBusiness Academy program was one of the most complete, but had similar limitations. Most of the Airbus Business Academy courses are short, which means a person must take 2-3 to gain the knowledge of a course from a university, it is certificate that is not equivalent to a degree. The institution is international but most courses are offered

in France, and it lacks other important topics related to international agreements, safety and maintenance.

The study may have been different if each institution had been asked whom they expected to pursue their graduate level aviation management degrees. For example, it matters whether universities expect student who are already in aviation, and who are continuing in higher graduate work in the same field, or if they expect other professionals who might enter the field late and have non-aviation degrees. An example of those expectations was the University of Arizona, which has one of the smallest curriculums. When asked why their curriculum was comparatively small, they answered that it is because their aviation management degree is an extension of their undergraduate program. Most students who enroll in their aviation management degree at the graduate level already have most of the knowledge because they received an undergraduate degree in aviation management, aerospace or aeronautics. Also, if students from another field were to apply for their masters, they would most likely not be able to enter, as their requirement for prior aviation courses is heavy. For example, Middle Tennessee State University requires students who do not have a bachelor's degree related to aviation to complete 15 credit hours of undergraduate aviation coursework in addition to the requirements of the graduate aviation management program. However, these pre-requisite requirements were not examined for all institutions reviewed as part of this study. These limitations made it difficult to

determine if some schools are or are not including the needed courses to produce students well-versed in aircraft leasing.

Future Studies

The question that most needs further research and investigation is how most of the students who receive graduate level aviation management degree are perceived in the aircraft leasing job market. Every degree varies in price, but some of them are exceptionally costly. Those students with aviation management degrees may be the best suited candidates for jobs in aircraft leasing, as well as other aviation jobs such as airport operational management or airline planning, but how well are they prepared? Do they have the skills they need to be successful, or do they have to join other types of training programs on their own to attain the knowledge to qualify for a job in aircraft leasing? In reference to what topics for future aircraft leasing and management students should be included in current curricula by institutions, the question cannot be fully answered from the information gathered. Given that aircraft leasing is one of the least known sectors to the public, not enough information can be gathered to make that determination. The question remains if simply more courses are needed regarding leasing in existing aviation management master's degree programs, or if a new degree is necessary, perhaps under the umbrella of aviation management. The search for this answer brought as many questions. It may be that schools expect students to be able to take on jobs in aircraft leasing based off the business

courses they offer, along with the other courses such as “safety management,” “airport operations,” airline operations management,” and “aviation policy,” as these are the most common courses in most of the schools’ curricula. However, there is also still the possibility that U.S institutions do not feel there is a market for students with aircraft leasing skills, and that is why they choose to not include them as part of their aviation management master’s degrees. Further research into the market each institution intends to serve would be necessary to determine the answers to these questions.

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APPENDIX

APPENDIX A – ADDITIONAL TABLES

TABLE A-1

Training courses from Air-business Academy/Airbus	Course Description
Aeronautical Supply Chain Mgmt.	Understand the objectives and benefits of Supply Chain Management
Failure Modes and Effects Analysis	Learn a proven method for reducing or eliminating risks. Prevention is better than cure; Understand the background and purpose of FMEA within an aeronautical context and prepare, conduct and monitor your own analysis.
Lean Training and Coaching	Experience lean concepts with the added value of identifying problem areas in your workplace and treating those specific problems both during the course and afterwards through on the job coaching.
Mastering International Negotiations	Provides the framework and guidance for the planning and conduct of successful mutual gain business negotiations in an international context.
Agile Innovation and How to Lead Cross Functional Teams	Grasp this opportunity to discover leading practices to put innovation at the center of your business and focus your project on the rapid delivery of business value. How to manage your cross-functional team, allowing people with different ideas, perspectives, and expertise to voice their ideas and find creative and innovative solutions to your business decisions.
Airline Marketing & Fleet Planning	Overview of fleet planning management, from traffic forecasting to network planning and fleet definition. Learn how to structure the fleet planning process and how to analyse alternative fleet solutions. Reviews marketing principles and clarifies marketing concepts used in the airline industry. You will assess how different marketing strategies are applied and their significance in the operation of an airline.
Aircraft Asset Management & Cabin	Examine the main issues of re-marketing, operating & financing second-hand aircraft. Learn how aircraft cabin is evolving, according to design, market needs & competitive issues.
Aircraft Finance	Improve understanding of airline financial performance & aircraft financing tools & techniques from the perspectives of airlines, lessors, bankers & manufacturers.
The Key to Successful Project Mgmt. in Aerospace	Gain an in-depth and comprehensive knowledge of the theory, processes, tools and methodologies of project management within the aerospace industry.

Aircraft Operating Lease Market	Enhances your knowledge of an aircraft operating lease and its value to all parties concerned: aircraft manufacturer, lessee and lessor. Compares in detail different leasing and financial structures.
Aircraft Customization vs. Standardization & Evaluation	Discover how airlines evaluate competing aircraft types based on technical and economic criteria. Examines the different aspects of aircraft design and aircraft product requirements from airlines along with the implications of pre-delivery aircraft customization vs. standardization.
Commercial Aspects of Aircraft Maintenance	Identifies the drivers in maintenance costs evaluation and analyses arguments concerning maintenance matters in commercial discussions.

Table A-2	<u>Arizona State University</u>	
Aviation Business Core	Name	Description
OMT 504	Law and Ethics for Technical Professional	Students identify and analyze statutory, regulatory, constitutional, and organizational laws that affect the information technology professional. Students locate and apply case law and common law to current legal dilemmas in the technology field. Students apply diverse viewpoints to ethical dilemmas in the information technology field and recommend appropriate actions.
AMT549	Research Methods	Emphasis on research as a significant component of graduate study to include methods, procedures, style, and form.
AMT522	Aviation Law	This course is intended as an introduction to aviation law. The course will cover the basic legal framework of aviation law including international treaties, federal statutes, regulations as well as state and federal tort law and choice of law issues relating to aviation accident litigation.
AMT525	Airport Planning and Design	The course provides a broad overview of the airport industry and creates awareness of the underlying marketing, financial, operational and other factors influencing airport management.
AMT 526	Aviation Labor Relations	Ethical concerns underlying labor relations, employee dissatisfaction, collective bargaining, labor/management conflicts, and other human resource management issues and trends will be discussed.
AMT 541	Aviation Physiology	Aviation physiology deals with the physiological challenges encountered by pilots and passengers when subjected to the environment and stresses of flight. Also, the impact of altitude in the human body.
AMT 523	Intermodal Transportation Management	The connection between the links of the global supply chain
AMT 527	Airline Management Strategies	The course provides a broad overview of the airline industry and creates awareness of the underlying marketing, financial operational and other factors influencing airline management.
AMT 530	Intermediate Statistics	The study of statistics, airport data, forecasting
AMT 546	Crew Resource Management	This course provides details on the principles of CRM in the aviation industry, but is also suitable to other industries as the principles can be applied in all

		areas where effective teamwork and respect of each team member's skills and backgrounds are to be coordinate
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Table A-3	Delta State University	
Aviation Business Core	Name	Description
CAV 605	Statistics for Aviation Research	The study of airline statistics, airport data, DOT airlines statistics, airport obstruction charts, forecasting aviation activity and operational metrics.
CAV 610	Advanced Human Factors	The study of human interface with the airplane and the operational environment. Crew coordination and decision making will be explored through case studies. The objective is to prepare to respond to critical safety of flight situations.
CAV 620	Airline Management	The course provides a broad overview of the airline industry and creates awareness of the underlying marketing, financial, operational and other factors influencing airline management.
CAV 630	Aviation's Regulatory Environment	The study of actual case histories and FAA officials' opinions. Explains FARs part 1, 61, 91, 141, 121, 135, and NTSB 830. Past historical and legislation events, acts, and treaties will be examined.
CAV 640	Airport Planning, Development, and Operation	The course provides a broad overview of the airport industry and creates awareness of the underlying marketing, financial, operational and other factors influencing airport management.
CAV 650	Fixed Based Operations	The study of fixed-base operations, to include organization and functions of flight operations, airfield services, maintenance activities, and flight training programs. This course explores the relationships among the fixed-base operator, the airport authority and the community, and the regulating bodies governing the fixed-base operators. Students tour local fixed-base operations and study contemporary problems through case studies. Flight operations, fueling and airfield services, maintenance activities, and flight training programs will be examined for profitability and viability.
CAV 660	Advanced Aviation Safety	The study of aviation safety and Safety Management Systems (SMS) through the study of aviation accidents. Designed to provide understanding of the contemporary issues faced by the industry and risk mitigation strategies, including the implementation of an SMS program. Accident investigative techniques, reporting methods and lessons learned will also be addressed.
CAV 670	Air Cargo	The course will give the student the opportunity to learn the knowledge and skills required for an exciting and challenging career in airlines, air freight forwarders, express couriers and general logistics and supply chain management.

CAV 680	Advanced Transportation Systems	Each student must take other courses associated with various tracks. The tracks include transportation planning, advanced transportation systems, aircraft systems.
CAV 690	Special Topics in Business Administration	Strategic Management, Accounting and Financial Management, Marketing Management

Table A-4	Embry-Riddle University	
Aviation Business Core	Name	Description
BA 511	Operations Research	The study of scientific approaches to decision making. Through mathematical modeling, it seeks to design, improve and operate complex systems in the best possible way.
BA 514	Strategic Marketing Management in Aviation	The course is designed to provide the student with an overview of marketing and marketing strategies in the planning and operations of the organization
BA 517	Accounting for Decision Making	Designed to understand financial statements, statement analyses, and how use accounting information to plan and control business decisions.
BA 518	Managerial Finance	This course builds on the concepts of the time value of money and introduces applications involving the valuation of bonds and stocks, and using net present value and other investment criteria to make investment decisions.
BA 520	Organizational Behavior, Theory and Applications in Aviation	This course examines organizational behavior with emphasis on fundamental concepts for managerial practice. Special topics include organizational leadership as well as quality and conflict management.
BA 523	Advanced Aviation Economics	Comprehensive analysis of airline economics. Principles of macro and microeconomics will be introduced.
BA 635	Business Policy and Decision Making	The course is designed to equip students with analytical tools for cracking cases studies by scanning the business environment and coming to a decision making.
Aviation Management		
BA 604	International Management and Aviation Policy	The course addresses international management and aviation policy through the examination of major trends and issues challenging the aviation manager. Cross-cultural situations are evaluated from the perspective of interpersonal relationships in a diverse and domestic and foreign environment
BA 609	Airline Operations and Management	The course provides a broad overview of the airline industry and creates awareness of the underlying marketing, financial, operational and other factors influencing airline management.
BA 645	Airport Operations and Management	The course provides a broad overview of the airport industry and creates awareness of the underlying

		marketing, financial, operational and other factors influencing airport management.
Ba 646	Air Cargo Logistics Management	The course will give the student the opportunity to learn the knowledge and skills required for an exciting and challenging career in airlines, air freight forwarders, express couriers and general logistics and supply chain management.

Table A-5	Everglades University
Name	Description
Aviation Human Factors and Psychology	The study of human interface with the airplane and the operational environment. Crew coordination and decision making will be explored through case studies. The objective is to prepare to respond to critical safety of flight situations.
Aviation Safety Program Management	The study of aviation safety and Safety Management Systems (SMS) through the study of aviation accidents. Designed to provide understanding of the contemporary issues faced by the industry and risk mitigation strategies, including the implementation of an SMS program. Accident investigative techniques, reporting methods and lessons learned will also be addressed.
The Airway Transportation System	The primary duties of an ATSS are linked to maintaining the safe and efficient operating capacity of the vast and complex network of electronics systems required for the world's largest air traffic control and navigation system.
Aerospace Communication Systems	This course will cover fundamentals of digital communications and networking. It will study the basics of information theory, sampling and quantization, coding, modulation, signal detection and system performance in the presence of noise. The study of data networking will include multiple access, reliable packet transmission, routing and protocols of the internet. The concepts taught in class will be discussed in the context of aerospace communication systems: aircraft communications, satellite communications, and deep space communications.
Aerospace Simulation Systems	Introduces the concept of modeling and simulation as it relates to air transportation problems. Use of a basic simulation language with practical exercises.
Aerospace Technology Development	Presents an introduction to measurement strategies in an industrial and human resource environment. The evaluation of measurement outcomes will be the primary focus. Using statistical concepts appropriate for industrial environments, the role of the manager in planning and conducting effective research will be presented.
Security for the Aviation Industry	This course offers an introduction to contemporary aviation security issues through the study of incidents, ICAO and U.S. regulatory agency requirements, and an understanding of practical security measures at major aviation entities.
Airfield Operations and Management	Airfield operations studies the entire airfield area of an airport. Their duties include ensuring the safe take-off and landing of aircraft, maintaining navigational aids, performing inspections, and communicating with air traffic control.
Contemporary Issues and Trends in Aviation	Provides extensive multi-modal transportation security experience. Discussion will cover air, maritime, rail, mass transit, trucking and oil pipeline security programs as well as applicable threat mitigations.
Airline Operations and Management	The course provides a broad overview of the airline industry and creates awareness of the underlying marketing, financial, operational and other factors influencing airline management.
Aviation Logistics Management	The course will give the student the opportunity to learn the knowledge and skills required for an exciting and challenging career in airlines, air freight

	forwarders, express couriers and general logistics and supply chain management.	
Table A-6	Florida Institute of Technology	
Aviation Business Core	Name	Description
AVM 5106	Corporate Aviation Operations and Management	Presents managerial, operational, maintenance and safety aspects of corporate air transportation systems. Includes management structures, ownership options, aircraft selection criteria, financing and pricing models, operations management, maintenance management, and associated regulations such as 14 CFR Parts 91, 119 and 135.
AVM 5107	Airline Management	The course provides a broad overview of the airline industry and creates awareness of the underlying marketing, financial, operational and other factors influencing airline management.
AVM 5103	Airport Operations	The course provides a broad overview of the airport industry and creates awareness of the underlying marketing, financial, operational and other factors influencing airport management.
AVM 5104	Aviation Economics and Fiscal Management	Focuses on the fiscal management of airports (financial management, operating and capital budgeting, business relationships, capital funding sources and mechanisms) and selected financial issues of airlines and others in the aviation industry.
AVS 5206	Aviation Security	Vigorously examines post-9/11 U.S. and global national security issues. Reviews selected aviation-related case studies in terrorism and hijacking to help identify contemporary and emerging threats.
AVS 5207	Aviation Safety Management Systems	Provides in-depth study of aviation safety management systems (SMS). Includes quality management principles, process-based safety risk management and safety assurance and proactive safety culture. Also, covers predictive safety management tools and methods including SMS implementation strategies.

Table A-7	Lewis University	
Aviation Business Core	Name	Description
AVTR 50000	Overview of the Aviation and Transportation Industry	The student will study the transportation industry's process of moving people and cargo around the world. Topics will include governmental regulation and the associated security concerns/procedures.
AVTR 51000	Planning Strategically for Aviation and Transportation	The student will study current trends in aviation/ transportation fiscal management from the perspective of project development and monitoring, including accounting, budgeting and purchasing. Studies in innovative and strategic financial decision-making will be introduced which include issues such as purchasing vs. leasing, outsourcing, and fractional ownership.
AVTR 52000	Human Factors and Safety in Aviation and Transportation	This course will explore the impact of the human element on safety in the various modes of transportation. Topics will include human information processing, group interactions, decision making, fatigue, and safety management systems.
AVTR 53000	Regulation of the Aviation and Transportation Industry	Governmental bodies, domestic trade organizations and international advisory groups issue regulations, guidelines and procedural standards which directly impact transportation. This course highlights the degree to which regulation shapes the industry.
AVTR 54000	Quality Management Systems for Aviation and Transportation Safety	A Safety Management System (SMS) is a dynamic management system based on Quality Management System (QMS) principles in a structure scaled appropriately to the operational risk, and applied in a safety culture environment in aviation and transportation. Safety management must be a cardinal priority for every transportation organization, including private enterprise and regulatory agencies. This course will cover not only concepts of SMS, but also the history of quality management, and present critical QMS concepts such as quality tools, strategic planning, deployment, statistical performance measurement, leadership/management, and documentation.
AVTR 56000	Human Resource Management and Labor Relations in the Aviation and Transportation Industry	A study of the role of human resource management including hiring practices, initial employee training, professional development, and establishing employee benefit packages. Ethical concerns underlying labor relations, employee dissatisfaction, collective bargaining, labor/management conflicts, and other human resource management issues and trends will be discussed.
AVTR 57000	Topics in Aviation and Transportation	A select study of contemporary issues in aviation and other transportation industries. Topics may include such contemporary issues as incorporating Unmanned Aerial Vehicles into the National Airspace System, airspace capacity

		and the Next Generation Air Transportation System, planning responses to intermodal transport systems, and current trends in transportation security. Subject matter will vary.
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Table A-8	Lynn University	
Aviation Business Core	Name	Description
MBA 600	Leadership and Management of Organization	Using foundational readings, case studies, and critical analysis techniques, the contribution of past and contemporary aviation leaders will be reviewed
MBA 620	Marketing Management in a Global Economy	Global marketing teaches a how to sell a product internationally, it includes the whole process of planning, producing, placing, and promoting a company's products in a worldwide market. Large businesses often have offices in the foreign countries they market to; but with the expansion of the Internet, even small companies can reach customers throughout the world.
MBA 640	Managerial Accounting	Designed to understand financial statements, statement analyses, and how use accounting information to plan and control business decisions.
MBA 645	Financial Management	This course builds on the concepts of the time value of money and introduces applications involving the valuation of bonds and stocks, and using net present value and other investment criteria to make investment decisions.
MBA 651	Creativity and Innovation	Keys to succeed with creativity and innovation, companies that have done the best over the long haul are those who are the most creative and innovative.
MBA 652	Managing Entrepreneurial Ventures	This course will expose students to key strategic challenges faced by investors, managers and technologists at different stages of the development of knowledge-intensive businesses. Characteristic of such businesses is an emphasis on innovation, ecosystems and standards.
MBA 671	Special Topics in Aviation Management	Studies in depth a specific case or topic in aviation management.
MBA 671	Aviation Organization Operation	The course provides a broad overview of the airline industry and creates awareness of the underlying marketing, financial, operational and other factors influencing airline management.
MBA 675	Airport Operations	The course provides a broad overview of the airport industry and creates awareness of the underlying marketing, financial, operational and other factors influencing airport management.
MBA 690	Strategic Management Seminar	The Strategic Management Seminar focuses on directing resources and efforts effectively toward the school's mission.

Table A-9	Middle Tennessee State University	
Aviation Business Core	Name	Description
AERO 6120	Aviation History	Detailed examination of the development and role of aviation and its economic, social, and political impact on the modern world. Particular emphasis on the global aspects of civilian aviation and the consequences of the transportation revolution it engendered.
AERO 6130	Aviation Safety Management	An examination of the various programs which airport operators employ in operating and maintaining airport safety and security services. Special emphasis on federal guidelines and their applications at commercial service airports.
AERO 6150	Aviation Industries	An overview of domestic and international air transportation businesses. Includes an analysis of extant and forecast labor requirements.
AERO 6610	Introduction to Aerospace Research	Emphasis on research as a significant component of graduate study to include methods, procedures, style, and form.
AERO 6611	Applied Statistics in Aerospace Research	Introduction to inferential statistics, including parametric and nonparametric, and descriptive statistics using specific examples from research in aerospace. Only statistics most commonly used in aerospace/aviation will be covered. General objective is to help students understand applied statistics; specific objective is to show students how to apply statistics specific for research designs used in aerospace/aviation.
BIA 6000	Quantitative Methods Survey	Quantitative methodologies to assist in the decision-making process. Emphasis on applied statistics and decision sciences topics that are practical, useful, and of wide application for business analysis.
AERO 6170	Scheduled Air Carrier Operations	An examination of contemporary problems and issues confronting airline industry policy makers, government regulators, managers, and the traveling public.
AERO 6330	International Aviation Systems	An in-depth analysis of international aviation with particular attention to U.S. aviation interface. Areas covered include the air traffic control systems, bilateral agreements, nationalized vs. privately owned carriers, ETOPS restrictions, marketing and operational difficulties, etc.
AERO 6350	General Aviation	Operations, supervision, and the role of administration in the general aviation industry.
	Electives	
AERO 6076	Selected Reading in Aerospace	Guided readings in aviation or space. Topics alternate each semester and range from historical events to possible future developments. Discussion, presentations, and critical analysis of material.

AERO 6190	Airport Organizational Structures & Operational Activities	A critical analysis of airport organizational structures, functions, and constraints affecting the airport. A detailed view of operational activities and methods to improve airport efficiency.
AERO 6220	Environmental Policy	Airport planning and land use programs and procedures as they are currently used within the industry.
AERO 6250	Airport Policy and Planning	The regulatory agencies of the aviation industry and their functions. Special emphasis on current problems and issues affecting the industry.
AERO 6270	Airport Design	Introduces the concepts of airport planning, design, and layout with particular emphasis on community characteristics and resource allocation. Students will become familiar with the Federal Aviation Administration's role in the airport design process.
AERO 6370	Aviation Contracts and Lease	An examination of the various agreements utilized by airports to define the terms and conditions for airlines, FBOs, concessionaires, air cargo operators, and other airport tenants. Analysis of the general provisions and requirements contained within airport leases and those specific to each tenant. A review of airport lease administration and compliance procedures.
AERO 6450	Airport Funding Policy	Airport subsidy funding by the local, state, and federal governments and their essential components as applied to local airports. Procedures necessary to obtain government funding and grants available for building new facilities and repairing existing buildings.
INFS 6610	Information Systems Management & Applications	Students will develop an understanding of issues and implications of information resources and end-user computing as well as develop skills in application of these concepts in a problem-solving oriented microcomputer system environment.

Table A-10	Oklahoma State University	
Aviation Business Core	Name	Description
AVED 5563	Aerospace Leadership & Management	Introductory course on leadership and management issues in the highly volatile aerospace environment. Introduction to management and leadership theory of the past, and exploration of the aviation environment of the future.
AVED 5663	Issues in the Airline/ Aerospace Industry	The components, participants, activities, characteristics, scope and economic significance of the air carrier industry and its major segments. The effects of regulation, competition, marketing, manufacturing and environmental control.
AVED 5823	Space Science	A study of the sun, inner and outer planets, asteroid belt, space probe exploration, orbital mechanics and missions.
AVED 5893	Aerospace Executive Decision Making	Application of concepts and lessons of executive decision leadership within the context of the aerospace environment. Utilization of problem solving skills and leadership lessons of the 21st century aerospace leader.
AVED 5453	Advanced Aviation Security	In-depth look at aviation security. Development of a greater understanding of problems associated with maintaining a secure aviation transportation industry. Familiarity with the history of attacks against aircraft, airports and other aviation facilities.
AVED 5463	Aerospace Risk Assessment	Students will gain insight and knowledge regarding the use of prevention-based techniques. These techniques include Project Planning, Project Reviews, Risk Analysis and Manufacturing Feasibility Risk Analysis, as well as conducting Project Reviews and planning for overall Project Reviews.
AVED 5883	Aviation Economics	The economic significance of the air carrier industry and its major segments. The effects of regulation, competition, schedules, marketing and environmental control.
AVED 5963	Aviation Operations	Extensive overview of airport operations. Familiarity with the regulatory history of air transportation, airports, the Federal Aviation Administration, and the Transportation Security Agency. Introduction to a wide variety of organizational structures found at US airports.
AVED 5773	Historical Significance of Aviation	Detailed examination of the development and role of aviation and its economic, social, and political impact on the modern world. Particular emphasis on the global aspects of civilian aviation and the consequences of the transportation revolution it engendered.
AVED 5953	Labor Relations in Aviation and Aerospace	Labor laws, regulations, and labor-management relations in the U.S. aviation and aerospace industry, underlying the air

		carriers, public airport infrastructure, and related government employers.
AVED 5973	Aerospace Law	Study of the legal system as it relates to aerospace law and governance of the aviation industry.
AVED 5993	Ethics in Aviation	Learning how to protect vital interests and maintain ethical control in highly regulated environments.

Table A-11	Park College St Louis University	
Aviation Business Core	Name	Description
ASCI 5010	Analysis of Aviation Safety	An examination of the various programs which airport operators employ in operating and maintaining airport safety and security services. Special emphasis on federal guidelines and their applications at commercial service airports.
ASCI 5020	Aviation Safety Data Analysis	Industry accident/incident data and analysis as well as operational reports (pilot and flight attendant reports) captured in the Safety Trend Evaluation, Analysis & Data Exchange System (STEADES) database and annually published in Safety Reports
ASCI 5030	Aviation Security Management	An efficient, safe, and secure aviation system is integral to social and economic well-being. Aviation industry aids both travel and trade, connecting our cities and towns.
ASCI 5040	Human Factors in Aviation Safety	This course will explore the impact of the human element on safety in the various modes of transportation. Topics will include human information processing, group interactions, decision making, fatigue, and safety management systems.
ASCI 5080	Management of Aviation Safety Programs	SMS introduces an evolutionary process in system safety and safety management. SMS is a structured process that obligates organizations to manage safety with the same level of priority that other core business processes are managed.
ASCI 5100	Aviation Safety Career and Personal Development	-----
ASCI 5120	Aviation Safety Quality Issues	Aviation quality assurance is a system for monitoring aviation equipment, programs, and procedures to ensure that the Federal Aviation Administration (FAA) quality standards are being met.
ASCI 5220	Aviation Safety Ethics	Learning how to protect vital interests and maintain ethical control in highly regulated environments.
ASCI 5230	Professional Ethics and Standards	Professional ethics is a term that encompasses the organizational and personal standards of behavior a professional individual is expected to possess. Most organizations have their own internal code of practice that defines the professional ethics of a certain profession.
ASCI 5460	Qualitative Analysis	Identification of the constituents, e.g., elements or functional groups, present in a substance.
ASCI 5470	Quantitative Analysis	Analysis of a situation or event, especially a financial market, by means of complex mathematical and statistical modeling.

ASCI 6010	Federal and International Regulatory Environment	There are a number of federal, state, and local laws, regulations, ordinances, and other activities and conditions that affect the environment, health, International regulations apply to air and marine transport of laboratory materials.
ASCI 6020	Flight Operations Business and Administration	The Flight Operations Business Administration class will provide information to help Manager, Publications and Administration, and the entire Flight Operations Airlines team by assisting and coordinating the main functions of the Deployed Operations programs both summer and winter, Flight Operations monthly and yearly departmental budgets, as well as other day to day administrative tasks where required.
ASCI 6030	Aviation and Public Policy	Aviation Public policy teaches the principle guide to action taken by the administrative executive branches of the state with regard to a class of issues, in a manner consistent with law and institutional customs.
ASCI 6050	Legal and Ethical Issues in Collegiate Flight Education	--
ASCI 6060	Aviation Curriculum Dev. &mgmt.	--
ASCI 6070	Aviation Training Methods and Practice	---
FSCI 5230	Economics of Air Transportation	The economic significance of the air carrier industry and its major segments. The effects of regulation, competition, schedules, marketing and environmental control.

Table A-12	Purdue University
Name	Description
International Civil Aviation Regulatory	Provides extensive multi-modal transportation security experience. Students will receive detailed information on air, maritime, rail, mass transit, trucking and oil pipeline security programs, as well as applicable threat mitigation processes. Research will be conducted on emerging international aviation issues.
Quality & Productivity in Industry & Technology	Examines the contemporary issues of continuous improvement in quality and productivity in manufacturing and service industries. Includes a close examination of the evolving philosophies' bearing on the scope, improvement and costs of quality assurance programs in industry and technology.
Human Error	Explores the definition and nature of human error, error chains and casual factors in error generation. Error taxonomies will provide a classification scheme for grouping errors and assessing error criticality. Methods for assessing risk and predicting error generation potentials will be investigated. Accident and incident case studies will be utilized throughout the course to illustrate course concepts.
Research Methods in Aviation	Explores the practical approach to research as it applies to identifying and analyzing problems in aviation industry settings. Such problems and issues often require a diversity of research skills to effectively address dynamic problems in complex and often high-risk work environments. The course offers an overview of mixed research methods that lend themselves well to practical problem solving.
Measurement & Evaluation in Industry & Technology	Presents an introduction to measurement strategies in an industrial and human resource environment. The evaluation of measurement outcomes will be the primary focus. Using statistical concepts appropriate for industrial environments, the role of the manager in planning and conducting effective research will be presented.
Management and Design of Training Systems	Examines practical applications of managing the training process in industry and educational settings, including the development of instructional materials from an adult learner viewpoint. Students will design an instructional program using established management training models. Curriculum design using various forms of media and delivery strategies will be emphasized.
Measurement & Evaluation in Industry & Technology	Presents an introduction to measurement strategies in an industrial and human resource environment. The evaluation of measurement outcomes will be the primary focus. Using statistical concepts appropriate for industrial environments, the role of the manager in planning and conducting effective research will be presented.
Aviation Leadership	Using foundational readings, case studies, and critical analysis techniques, the contribution of past and contemporary aviation leaders will be reviewed.
Resource Analysis and Optimization	Develops the skills to analyze, formulate and apply techniques for work task improvement. Concepts include work flow enhancement, critical element streamlining, and value added analysis.

Contemporary Issues in Transportation Security	Provides extensive multi-modal transportation security experience. Discussion will cover air, maritime, rail, mass transit, trucking and oil pipeline security programs as well as applicable threat mitigations.
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Table A-13	University of Central Missouri	
Aviation Business Core	Name	Description
AVIA 5002	Aviation Professional Ethics	Learning how to protect vital interests and maintain ethical control in highly regulated environments.
CTE 5900	Introduction to Research Methods	Emphasis on research as a significant component of graduate study to include methods, procedures, style, and form.
AVIA 5940	Current Literature and Research	---
AVIA 5500	Aircraft Systems Safety and Risk Management	Students will develop an understanding of issues and implications of information resources and end-user computing as well as develop skills in application of these concepts in a problem-solving oriented microcomputer system environment.
AVIA 5510	Aviation Safety Program Management	An examination of the various programs which airport operators employ in operating and maintaining airport safety and security services. Special emphasis on federal guidelines and their applications at commercial service airports.
AVIA 5590	Aviation Safety Law	Study of the legal system as it relates to aerospace law and governance of the aviation industry.
AVIA 5520	Aircraft Accident Investigation	Investigation of Aircraft Accidents
AVIA 5522	Technical Analysis of Aircraft Accidents	This course deals with the technicalities of aircraft accidents
AVIA 5530	Principles of Aviation Accident Causation	Human error and other human factors
AVIA 5600	Human Dynamics in the Cabin	Cabin related matters
AVIA 5605	Psychological Human Factors	This course will explore the impact of the human element on safety in the various modes of transportation. Topics will include human information processing, group interactions, decision making, fatigue, and safety management systems.
AVIA 5615	Human Error and Fatigue	Explores the definition and nature of human error, error chains and casual factors in error generation. Error taxonomies will provide a classification scheme for grouping errors and assessing error criticality. Methods for assessing risk and predicting error generation potentials will be investigated. Accident and incident case studies will be utilized throughout the course to illustrate course concepts.
AVIA 5030	Airport Planning and Design	Many factors and considerations go into the planning and design of modern airports. Safely moving people, aircraft and cargo in and out of facilities requires coordination, cooperation and collaboration among internal and external stakeholders.

AVIA 5070	Aviation Maintenance Safety	Aviation safety is a term encompassing the theory, investigation, and categorization of flight failures, and the prevention of such failures through regulation, education, and training.
AVIA 5080	Air Traffic Control Error Mgmt.	Air traffic control (ATC) is a service provided by ground-based controllers who direct aircraft on the ground and through controlled airspace, and can provide advisory services to aircraft in non-controlled airspace.

Table A-14	University of North Dakota	
Aviation Business Core	Name	Description
AVIT 502	Aviation Economics	An in-depth examination of the economic aspects of the air transportation industry, with microeconomic analysis applied to decision making in the airline, general and corporate aviation, and airports. Topics include: basic economics of air transport supply and demand; demand forecasting; cost drivers; yield, revenue and capacity management; regulatory issues; political influences; and unique economic characters of international commercial aviation.
AVIT 503	Statistics	This course is an in-depth study of inferential statistics with emphasis on the analysis of variance models and subsequent comparison procedures. In addition, the course will include coverage of correlation and multiple regression techniques as data analytic tools. Also, coverage of survey construction and analysis of survey data will be presented.
AVIT 504	Research Methods	Emphasis on research as a significant component of graduate study to include methods, procedures, style, and form.
AVIT 510	Aviation Public Policy and Regulations	A discussion of the initiation, formulation and implementation of aviation public policies and their effects upon the various segments of the aviation industry. Various regulatory areas such as scheduled air carriers, general aviation, airport operations, air traffic control, and international agreements will be analyzed.
AVIT 511	Aviation Information Technology	Students will develop an understanding of issues and implications of information resources and end-user computing as well as develop skills in application of these concepts in a problem-solving oriented microcomputer system environment.
AVIT 512	Aviation Environmental Issues	This course examines current environmental issues within the aviation industry in the context of historical environmentalism, current laws and regulations, and emerging research findings. A broad survey of earth systems precedes a focused examination of contemporary aviation environmental issues.
AVIT 513	Aviation Safety Management Systems	An examination of the various programs which airport operators employ in operating and maintaining airport safety and security services. Special emphasis on federal guidelines and their applications at commercial service airports.
AVIT 514	Aviation Management Theory	An in-depth review of organizations in the aviation industry, their structures, environments and leadership as it relates to human behavior. Topics include organizational design, climate and the interactions with individuals, groups, and different organizational structures within the airline, general aviation, corporate aviation and airport organizations.

AVIT 515	Human Factors	This course will explore the impact of the human element on safety in the various modes of transportation. Topics will include human information processing, group interactions, decision making, fatigue, and safety management systems.
AVIT 516	Training System Design	The process of memory, learning, and judgment will be related to instructional design strategies in the aviation industry, where heavy use of simulation is used in the training and evaluation of aviation professionals. Topics include instructional design and assessment concepts, simulation design and decision-making skills.
AVIT 517	Airline Labor Relations and Law	This course will examine the impact and application of the Railway Labor Act as it pertains to airline operations. Topics of study will include labor history; organization; alternative dispute resolution, collective bargaining, including interest-based practices; and emerging labor trends.
AVIT 518	Human Error	Explores the definition and nature of human error, error chains and casual factors in error generation. Error taxonomies will provide a classification scheme for grouping errors and assessing error criticality. Methods for assessing risk and predicting error generation potentials will be investigated. Accident and incident case studies will be utilized throughout the course to illustrate course concepts.
AVIT 520	Strategic Airport Planning	This course will explore the elements of airport planning within the public administration domain. Emphasis will be placed on individual airport's strategic plans, how airports operate efficiently and effectively with changing regulations and economic fluctuations in the global marketplace.
AVIT 521	Ethics in Aerospace	Learning how to protect vital interests and maintain ethical control in highly regulated environments.
AVIT 587	Supervised Field Work	Used primarily for individualized field placement so that the student may acquire practical experiences in the aviation industry.
AVIT 590	Aviation Seminar	A series of lectures presented by visiting lecturers and the faculty.
AVIT 591	Reading in Aviation	Readings in selected Aerospace Studies topics, with written and/or oral reports.
AVIT 593	Individual Research in Aviation	Individual student projects designed to develop advanced knowledge in a specific area of expertise.

Table A-15	Vaughn College
Name	Description
General Management	The General Management Course is concerned with the leadership and management of the enterprise as a whole.
Marketing and Public Relations	Marketing and PR are management functions. The two serve different purposes, however. Marketing is a line function that directly contributes to an organization's bottom line. Public relations are a staff function that indirectly supports an organization's goals and objectives.
Managerial Statistics	The study of statistics, data, airlines statistics, airport obstruction charts, forecasting aviation activity and operational metrics.
Operations Management	The study of scientific approaches to decision making. Through mathematical modeling, it seeks to design, improve and operate complex systems in the best possible way.
Financial Management	This course builds on the concepts of the time value of money and introduces applications involving the valuation of bonds and stocks, and using net present value and other investment criteria to make investment decisions.
Organizational Behavior and Human Resources Management	A study of the role of human resource management including hiring practices, initial employee training, professional development, and establishing employee benefit packages. Ethical concerns underlying labor relations, employee dissatisfaction, collective bargaining, labor/management conflicts, and other human resource management issues and trends will be discussed.
Airport Management and Security	The course provides a broad overview of the airport industry and creates awareness of the underlying marketing, financial, operational and other factors influencing airport management.
Airport Planning and Operations	The course provides a broad overview of the airport industry and creates awareness of the underlying marketing, financial, operational and other factors influencing airport management.
Airport Operations Safety	Aviation Safety is the primary consideration on the function of airports, especially during construction.
Aviation Environmental Management	The study of actual case histories and FAA officials' opinions. Explains FARs part 1, 61, 91, 141, 121, 135, and NTSB 830. Past historical and legislation events, acts, and treaties will be examined.
Airport Economics and Finance	The economic significance of the airport industry and its major segments. The effects of regulation, competition, schedules, marketing and environmental control.
Occupational Safety	Occupational safety and health (OSH), also commonly referred to as occupational health and safety (OHS), occupational health, or workplace health and safety (WHS), is a multidisciplinary field concerned with the safety, health, and welfare of people at work.

TABLE A-16

Training courses from Air-business Academy/Airbus	Arizona State University	Delta State University	Embry-Riddle University	Everglades University
Aeronautical Supply Chain Mgmt.	Yes, it is cover within the course of Intermodal Transportation Management	Not Included	Yes, general topic of Supply Chain Mgmt. covered in Air Cargo Logistics course	Yes, topic covered under Aviation Logistics Mgmt. course
Failure Modes and Effects Analysis	Yes, included in part in courses; Law and Ethics for Technical Professionals and Aviation Physiology	Yes, fulfills general aspects in courses; Advanced Aviation Safety and Advanced Human Factors	Not included	Yes, topic covered in Aerospace Communication Systems, Aviation's Safety Program and Aerospace Technology Development
Lean Training and Coaching	Not Include	Not Included	Yes, included in Organizational Behavior	Not Included
Mastering International Negotiations	Not Included	Not Included	Yes, included in Operations Research, Business Policy and International Mgmt. & Av. Policy	Not Included
Agile Innovation and How to Lead Cross Functional Teams	Not Included	Yes, covered in parts in Special Topics of Business Administration and Arline Mgmt.	Yes, included in Organizational Behavior	Yes, covered in topics of Airline Operations and Mgmt.
Arline Marketing & Fleet Planning	Yes, included in Airline Mgmt. Strategies	Yes, fulfilled with Airline Management	Yes, included in Strategic Marketing Mgmt. in Aviation	Yes, partially covered in Arline Operations and Mgmt.

Aircraft Asset Management & Cabin	Not Included	Not Included	Not included	Not Included
Aircraft Finance	Yes, included in Airline Mgmt.	Yes, fulfilled topic by Special Topics in Business Administration, Airline Mgmt.	Yes, Included in Advanced Aviation Economics	Yes, partially covered in Arline Operations and Mgmt.
The Key to Successful Project Mgmt. in Aerospace	Yes, included in Airline Mgmt. Strategies and Labor Relations	Yes, topics fulfilled in courses; Air Cargo, Advanced Aviation Safety and Airline Mgmt.	Yes, included in several mgmt. subjects of the ER program	Not Included
Aircraft Operating Lease Market	No Included	Not Included	Not Include	Not Included
Aircraft Customization vs. Standardization & Evaluation	Not Included	Not Included	Not Included	Not Included
Commercial Aspects of Aircraft Maintenance	Not Included	Yes, topics of maintenance covered under Fixed Based Operation	No, Possible, very limited review of the subject in "Airline Operations and Mgmt."	Not Included

Training courses from Air-business Academy/Airbus	Florida Institute of Technology	Lewis University	Lynn University	Middle Tennessee State University
Aeronautical Supply Chain Mgmt.	Not Included	Not Included	Not Included	Not Included
Failure Modes and Effects Analysis	Yes, covered in courses; Aviation Safety Mgmt. Systems and Aviation Security	Yes, covered in Quality Mgmt. Systems for Aviation and Transportation Safety	Not Included	Yes, topic covered in Aviation Safety Mgmt.

Lean Training and Coaching	Not Included	Not Included	Not Included	Not Included
Mastering International Negotiations	Not Included	Yes, topic covered in course Regulation of the Aviation and Transportation Industry	Yes, topic covered in Marketing Mgmt. in a Global Economy	Yes, topic covered in course Aviation Industries
Agile Innovation and How to Lead Cross Functional Teams	Yes, covered partially in Airline Mgmt.	Yes, topic covered in Human Factors and Safety in Aviation and Transportation	Yes, topic covered in course Leadership and Mgmt. of Organization	Not Included
Airline Marketing & Fleet Planning	Yes, topic covered in courses; Aviation Economics and Fiscal Mgmt. and Airline Mgmt.	Yes, covered in course Planning Strategically for Aviation and Transportation	Yes, topic covered in Marketing Mgmt. in a Global Economy	Not Included
Aircraft Asset Management & Cabin	Not Included	Not Included	Not Included	Not Included
Aircraft Finance	Yes, topic covered in Aviation Economics and Fiscal Mgmt.	Yes, covered in course Planning Strategically for Aviation and Transportation	Yes, topic covered in Financial Mgmt. course	Not Included
The Key to Successful Project Mgmt. in Aerospace	Yes, topic covered in courses; Corporate Aviation Operations and Mgmt.	Yes, covered in Human Resource Mgmt. And Labor Relations in the Aviation and Transportation Industry	Yes, topic covered in Special Topics in Aviation Management	Yes, topic covered in courses General Aviation and Scheduled Air Carrier Operations
Aircraft Operating Lease Market	Not Included	Yes, partially covered in Planning Strategically for Aviation and Transportation	Not Included	Yes, covered in Aviation Contract and Lease
Aircraft Customization vs. Standardization & Evaluation	Not Included	Not Included	Not Included	Not Included
Commercial Aspects of Aircraft Maintenance	Yes, topic in courses; Corporate Aviation Operations and Mgmt.	Not Included	Not Included	Not Included

Training courses from Air-business Academy/Airbus	Oklahoma State University	Parks College St Louis University	Purdue University	University of Central Missouri
Aeronautical Supply Chain Mgmt.	Not Included	Not Included	Not Included	Not Included
Failure Modes and Effects Analysis	Not Included	Yes, topic covered in Human Factors in Aviation Safety	Yes, covered in courses Measurement & Evaluation in Industry Technology and Mgmt. Design of Training Systems, and Human Error	Yes, covered under course Aviation Safety Program Mgmt.
Lean Training and Coaching	Yes, topic covered in Aerospace Executive Decision Making.	Not Included	Yes, covered in courses Resource Analysis and Optimization and Aviation Leadership	Not Included
Mastering International Negotiations	Not Included	Not Included	Not Included	Not Included
Agile Innovation and How to Lead Cross Functional Teams	Yes, topic covered in Aerospace Leadership & Mgmt.	Not Included	Yes, covered in courses Resource Analysis and Optimization and Aviation Leadership	Yes, partially covered in course Psychological Human Factors and Aircraft Systems Safety and Risk Mgmt.
Arline Marketing & Fleet Planning	Yes, topic covered in courses; Issues in the Airline/Aerospace Industry and Aviation Economics	Not Included	Not Included	Not Included
Aircraft Asset Management & Cabin	Not Included	Not Included	Not Included	Not Included
Aircraft Finance	Yes, partially covered in Aviation Economics	Not Included	Not Included	Not Included
The Key to Successful Project Mgmt. in Aerospace	Yes, covered in Aerospace Leadership & Mgmt.	Yes, topic covered in Aviation Curriculum Dev. & Mgmt.	Yes, covered in courses Resource Analysis and Optimization and Aviation Leadership	Not Included
Aircraft Operating Lease Market	Not Included	Not Included	Not Included	Not Included

Aircraft Customization vs. Standardization & Evaluation	Not Included	Not Included	Not Included	Not Included
Commercial Aspects of Aircraft Maintenance	Not Included	Not Included	Not Included	Yes, covered in Aviation Maintenance Safety course

Training courses from Air-business Academy/Airbus	University of North Dakota	Vaughn College		
Aeronautical Supply Chain Mgmt.	Not Included	Not Included		
Failure Modes and Effects Analysis	Yes, covered in Human Factors and Human Error courses	Yes, topic covered in parts in Airport Operations Safety and Airport Planning and Operations		
Lean Training and Coaching	Yes, covered in Airline Labor Relations and Law	Yes, topic covered by Organizational Behavior and Human Resource Mgmt.		
Mastering International Negotiations	Not Included	Not Included		
Agile Innovation and How to Lead Cross Functional Teams	Not Included	Not Included		
Arline Marketing & Fleet Planning	Not Included	Yes, partially covered in Airport Economics and Finance and Airport Planning and Operations		
Aircraft Asset Management & Cabin	Not Included	Not Included		

Aircraft Finance	Yes, covered in Aviation Economics	Yes, covered in Financial Mgmt.		
The Key to Successful Project Mgmt. in Aerospace	Yes, covered in courses Resource Analysis and Optimization and Aviation Leadership			
Aircraft Operating Lease Market	Not Included	Not Included		
Aircraft Customization vs. Standardization & Evaluation	Yes, partially covered in Aviation Economics course	Not Included		
Commercial Aspects of Aircraft Maintenance	Not Included	Not Included		