

A FIRST PROFESSIONAL DEGREE FOR  
THE AVIATION INDUSTRY: RECOMMENDATIONS FOR  
RESEARCH AND PRACTICE

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### Introduction

The deregulation of the airline industry precipitated a number of aviation industry changes:

In the fall of 1978, Congress deregulated commercial aviation, arguing that the airlines had matured and no longer required the protection offered by regulation . . . The effects of deregulation were felt almost immediately. Airlines, testing their new freedoms, increased fares on some routes and decreased them on others. They entered numerous new markets and withdrew from a number of smaller, low-density markets. New carriers filed for certification and new marketing strategies evolved as the airlines' managements attempted to structure their route networks for survival in the new, highly competitive environment. (Federal Aviation Administration, 1987, p. 3)

These changes, in turn, created or enhanced several aviation industry-wide problems:

The evolution of the industry to date has had a significant impact on Federal Aviation Administration (FAA) workload and facility planning. The rapid development of connecting hub airports and an increased airline emphasis on schedule frequency to attract and control traffic have made airport capacity problems a major challenge for the FAA. (Federal Aviation Administration, 1987, p. 3)

These problems have, in turn, called attention to the need for improvement in the preparation of aviation industry professionals to be better able to lead the aviation industry into a new and different era. For example, at least three domestic U.S. airlines have developed "ab initio" pilot preparation programs through various universities and community colleges. Also, the Federal Aviation Administration has developed both an "Airway Science Curriculum" and a "Cooperative Education Program in Air Traffic Control" in conjunction with the nation's leading aviation-oriented colleges and universities. But, where is the "common thread" for these programs? Should universities simply

be satisfied with renewed industry interest in universities during an impending crisis? Is there a need for a "first professional degree" (or set of degrees) for the aviation industry?

#### Definitions

The following definitions will be used in this study:

1. Aviation Industry. The aviation industry refers to that area of the economy devoted to the manufacture, operation and regulation aircraft. It includes such segments as aerospace manufacturing, airlines, general aviation, and government (other than the military). In 1985 the aviation industry employed over two million people (NewMyer, 1985, p. 36).
2. First Professional Degree. According to George H. Brown: "A first professional degree is one that signifies completion of the academic requirements for beginning practice in a given profession" (Brown, undated, p. 1). Academic requirements for the aviation industry are stated in the University Aviation Association's College Aviation Accreditation Guidelines.
3. A Profession. Webster's Third New International Dictionary defines this term as follows:

A calling requiring specialized knowledge and often long and intensive preparation including instruction in skills and methods as well as in the scientific, historical or scholarly principles underlying such skills and methods, maintaining by force of organization or concerted opinion high standards of achievement and conduct and committing its members to continued study and to a kind of work which has for its

prime purpose the rendering of a public service.  
(Webster, 1971, p. 1811)

4. The University Aviation Association (UAA). The Association includes 201 members (in 1986) who identify closely with the aviation industry. Among the aims and objectives of the UAA are these topics:

To furnish a national vehicle for the dissemination of information relative to aviation among institutions of higher education and governmental and industrial organizations in the aerospace field.

To facilitate the interchange of information among institutions that offer aviation programs that are non-engineering oriented; for example, Business Technology, Transportation, and Education. (UAA, 1976, p. 2)

The Concept of the Professional and First  
Professional Degree

The evolution of the concept of "professional degrees" began with an important debate about the meaning of the term "professional." Abraham Flexner, in his historic evaluation of medical schools and their degree offerings in 1915, presented six criteria which define a profession:

...they involve essentially intellectual operations with large individual responsibility; they derive their raw material from science and learning; this material they work up to a practical and definite end; they possess an educationally communicable technique; they tend to self-organization; they are becoming increasingly altruistic in motivation. (Houle, 1980, p. 22)

The Council on Postsecondary Accreditation (COPA) and The Council of Graduate Schools (CGS) in the United States has distinguished between research-oriented and practice-oriented (professional)

graduate degree programs. The primary objective of the professional graduate degree ". . . is to train graduate students through the Master's or Doctor's level in preparation for professional practice directed mainly toward the application or transmission of existing knowledge . . ." (COPA and CGS, 1978, p. 2).

According to Spurr, however, the professional versus research argument is not as crucial as which degree serves as the first professional degree.

In some professions, the bachelorship identifies the first professional degree . . . . The major patterns of undergraduate-graduate articulation involving the professional master's degree include: (1) An undergraduate program in a profession followed by a master's program in the same profession. In this instance, the baccalaureate is the first professional degree. (2) An undergraduate program in the liberal arts followed by a master's program in a profession. In this case the master's is the first professional degree. (3) An undergraduate program in a profession followed by a master's program designed to remedy the student's undergraduate deficiencies in basic science or the arts. (4) A professional field requiring five or six years of study from university matriculation to the first professional degree, which may be either at the bachelor's or the master's level. (Spurr, 1970, pp. 50 & 75)

Spurr's argument is that the "professional master's degree" can readily serve as the "First Professional Degree," depending upon .pa the status of the field and the sequence of education followed by the student.

In summary, the first professional degree is the minimum degree necessary to enter a profession, an industry segment or a particular kind of occupation in an industry. Most important of

all there has been no published discussion of the first professional degree as it applies to the aviation industry.

#### Research Procedure and Sample

This is a descriptive study in that it attempts to determine the view of a specific group of people (aviation educators) about the structure, content and need for non-engineering master's degrees in aviation. The study includes a literature search, collection of data through mailed questionnaires, analysis of replies and conceptualization of the results.

The second source of information used in this study is questionnaire responses from aviation educators concerning their perceptions of non-engineering master's degrees in aviation. The 1986 membership list of the University Aviation Association (UAA) includes 201 names of people who are involved in collegiate aviation programs. It is assumed that members of this group are knowledgeable about both the aviation industry and aviation education.

The questionnaire was developed to correspond to the research questions prepared for this study. The questionnaire was "piloted" with a panel of experts which included aviation educators at the local, state and national level. The analyses provided by this panel were focused on the format and clarity of the questionnaire. Based on suggestions by the panel, the questionnaire was refined. An initial mailing was made in early August 1987. A second mailing was made in September to those who had not responded.

### Response Rate

The 1986 individual membership list of the University Aviation Association includes 201 names. Each was mailed a questionnaire in August, 1986. A second mailing occurred in September, 1986 to the 90 members who had not responded to the first mailing.

A total of 141 responses (70.3 percent) was received, of which 125 (62.2 percent) were usable. The non-usable responses were mostly from people who were retired or were no longer related to the aviation field. These people wrote on the questionnaire that they were uncomfortable completing the survey instrument because of their lack of current contact with the aviation field.

Within the 125 "usable responses" the number of respondents answering the various questions on the survey instrument ranged from a low of 108 to a high of 125.

### First Professional Degree

As noted earlier, "a first professional degree is one that signifies completion of the academic requirements for beginning practice in a given profession" (Brown). When asked what their first professional degrees were, the respondents gave 54 separate responses at the bachelor's and master's degree level (see Table 1).

Table 1Array of Degree Titles of the First Professional Degrees Held by Respondents

Title of First Degree	Frequency
BA Govt	1
BME Aero	1
Business Admin	1
Adult Ed	1
Education	1
AV Maintain	1
MBA/A Erav	1
BS Pol Sc	1
BS Chem	1
BS Ba	1
BA Transport	1
MT Hood Comm Col	1
BS Mech Eng	3
BS Maths	1
BS Psycho	2
Chem Sc	1
BS Agriculture	1
BS Agronomy	1
BS Naval Eng	1
BS Second Ed	1
Business	1
BS IE	1
MPA	1
BS Ind Arts	1
BA Chem	1
BAS	1
Aero Astro Eng	1
BA Aero Sp	1
BAPsycho	1
BS Ind Eng	2
BA Ed	2
MS	1
Bach Aero Sc	1
BBA Personnel Ad	1
BA Physics	2
BS Zoology	1
MA Foreign Affair	1
BS Elec Eng	2
MS Acct	1
BBA	1
BS Mil Studies	1
Bach History	1



Table 1 (continued)

Title of First Degree	Frequency
BA Econ Hist	1
BA Econ	1
BS Av Eng Tech	1
BS Aero Tech	1
BSEE	1
BS Mil Sc	2
M Ed	1
BS Aeronautics	2
BA Mata Hist	1
BS ME	1
BS Aircraft Eng	1
BS Health Ed	1
MA Sociology	1
BS Aero Eng	3
Ed	1
No Degree	1
BA History	2
BA Economics	1
BS Polit Sci	1
BS Av Tech	2
BS	5
Just Academic De	1
B Ed	1
BS Music Ed	1
BS Math	1
BA	6
BS Bio Sc	1
AB	1
Bs Ed	6
Bach Music	1
Bach Arts	1
AAS Av	1
BS Av Mgt	2
BS Bus Adm	5
	108
TOTAL	

Leading the responses were business and education bachelor's degrees with six responses each. Other responses were as widely varying as chemistry, zoology, sociology, economic history, and military studies. Since the average age of the respondents is 50.4 years, these responses reflect entry of a substantial number of people into the aviation industry at least two decades ago (late 1950's through 1960's). And, since many people in the response group entered aviation through the military (see Table 2), the responses are likely to reflect the minimum degree necessary to enter the military. The wide disparity in responses shows that there was no commonly identifiable "first professional degree" for entry into the aviation industry. As noted in Table 2, close to half of the respondents entered the aviation industry by way of the military (55 respondents or 44 percent). Since aviation education is the area of emphasis of the University Aviation Association, it is not surprising that the second largest number of respondents, 27 (or 21.6 percent) showed aviation education as their "first position". General aviation - which usually means employment as a flight instructor - was the third largest "first position" segment at 21 responses (16.8 percent). General aviation flight instruction is a typical point of entry for many people coming into the aviation industry. When asked whether their first professional degree adequately prepared them for their first position in the aviation industry, 69 (57.0 percent) replied in the negative (see Table 3). In analyzing the

"First Professional Degrees" held by the "No" respondents, the vast majority of these degrees were baccalaureate degrees in non-  
Table 2

Distribution of Respondents by Their First Position  
in the Aviation Industry (By Industry Segment)

Aviation Industry Segment	Number	Percent
Manufacturing	7	5.6
Airline	8	6.4
General Aviation	21	16.8
Government	6	4.8
Military	55	44.0
Aviation Education	27	21.6
	124	100.0

Table 3

DISTRIBUTION OF RESPONSES TO THE QUESTIONS: DID YOUR FIRST PROFESSIONAL DEGREE ADEQUATELY PREPARE YOU FOR YOUR FIRST POSITION IN THE AVIATION INDUSTRY? AND WHAT WAS MISSING IN YOUR FIRST PROFESSIONAL DEGREE?

	Number	Percent
Yes	52	43.0
No	69	57.0
	121	100.0
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Items Missing:	Number	Percent
Aviation Content	46	59.0
Work Experience/Internship	6	7.7
Other Answers*	26	33.3
	78	100.0

\*The other answer category reflects a broad range of essay answers, including:

- (1) I got my first degree after my first position.
- (2) I had a position in secondary education before entering aviation.
- (3) Not applicable.
- (4) CFI-pilot.
- (5) Earned degree after military pilot training (several said something similar to #5).

aviation fields. Four of the "No" respondents held aviation related baccalaureate degrees. A total of 46 respondents stated that aviation content was missing from their first professional degree, while 6 respondents mentioned the lack of relevant work experience/internship.

When asked whether a non-engineering master's degree in aviation would have been helpful in gaining their first entry-level job in the aviation industry (see Table 4), 77 respondents

Table 4

Distribution of Responses to the Following: "Given My First Entry-level Job in the Aviation Industry, I Feel That A Non-engineering Aviation Master's Would Have Been Just As Helpful In Gaining Employment as My Firts Professional Degree."

	Number	Percent
Strongly Agree	34	27.8
Agree	43	35.2
Neutral	28	23.0
Disagree	9	7.4
Strongly Disagree	8	6.6
	122	100.0

(63.0 percent) either strongly agreed or agreed. Only 17 (or 14.0 percent) either strongly disagreed or disagreed. The non-engineering master's degree also has credibility with a majority of the respondents as a "First Professional Degree" with their respective aviation industry segments. A total of 98 respondents

strongly agreed or agreed that the non-engineering master's degree in aviation could serve in the capacity of "first professional degree" in their industry segment (see Table 5).

Table 5

Distribution of Responses to the Following: "I Feel That A Non-engineering Aviation Master's Degree Would Satisfy Entry-Level Employment Criteria For My Segment of the Aviation Industry?"

	Number	Percent
Strongly Agree	36	29.0
Agree	62	50.0
Neutral	11	8.9
Disagree	6	4.8
Strongly Disagree	9	7.3
	124	100.0

In summary, a clear majority of respondents (79 percent) favored non-engineering master's degrees in aviation as a first professional degree for the aviation industry. The majority of respondents also felt that their own first professional degree did not prepare them well for their first aviation industry job.

#### Conclusions

The following conclusions are drawn from this research:

1. The respondents showed no commonly identifiable "First Professional Degree" for the aviation industry.

Furthermore, over half of the respondents stated that their first professional degree did not prepare them for their

first position in the aviation industry.

2. The respondents first positions in aviation were largely in the military, aviation education or were general aviation-related.
3. Aviation content was the primary item missing from the respondents' first professional degree.
4. Sixty-three percent of respondents strongly agreed or agreed that a person should be able to get into the aviation field with a non-engineering aviation master's degree.
5. Seventy-nine percent of respondents strongly agreed or agreed that the non-engineering master's in aviation would satisfy entry-level employment criteria in their segment of aviation.

Based on these conclusions, the following recommendations are made:

#### Recommendations for Research

1. The results of this study point to a lack of a "first professional degree" for this group of respondents (average age of 50.3 years) from the aviation industry. Further research needs to be done to broaden the research base on this point so that a clear understanding of first professional degrees for the aviation industry can be achieved. For example, can an industry-wide "first professional degree" be created or will such a degree have to vary in level and content, depending upon industry segment or professional job content?

2. Regarding the aviation industry's needs for a first professional degree, further research needs to be done to parallel to this study, including a broader range of aviation industry practitioners as respondents.
3. Research needs to be done by someone from outside the aviation industry in the subject areas of industry wide professional entry and development requirements. People outside the industry will not have a built-in "pro-aviation" bias which might affect the results of the study.

#### Recommendations for Practice

1. The UAA should clearly define its mission in the non-engineering aviation fields. It is recommended that the UAA develop a mission statement regarding its role in the definition of first professional degrees, data collection, and accreditation of non-engineering aviation degree programs.
2. The UAA should create a "task force" (including external reviewers) to update its College Aviation Accreditation Guidelines in the area of "graduate aviation programs." The following task force goals appear appropriate based on the survey results:
  - A. Provide further study of the "First Professional Degree" needs of each aviation industry segment. Replicate this survey where needed and enhance the portion of the instrument related to first professional degree. The appropriate role of the non-engineering



master's in aviation should be studied by major and by industry segment.

- B. Based on "A", a set of professional academic standards should be created by industry segment and by degree content. A core aviation program should be identified for each segment.
3. Using Stephen Spurr's paradigm, a standard professional curriculum, or set of first professional degrees, needs to be established for the aviation industry. There are several major patterns for the development of a first professional degree. Yet, the aviation industry has not yet defined its own unique pattern for non-engineering fields. This needs to be done to provide a more organized, less haphazard way of preparing aviation industry professionals.
4. The University Aviation Association needs to tackle the larger issue of Accreditation through extensive contacts with the aviation industry. By establishing the standard professional curriculum as recommended in item 3 above, the UAA can take an important substantive step in the direction of becoming an accreditation body. With the years of experience since the creation of the College Aviation Accreditation Guidelines, and with the UAA's experience with the Airway Science Curriculum Committee, since 1982 it appears to be a good time for UAA to explore its role in accrediting non-engineering aviation curricula, but only if the aviation industry is actively involved in the effort.

After all, it is their need for personnel that UAA member schools are, in fact, attempting to meet.

## References

- Brown, G. (undated). First professional degree awards to women. Washington, DC: National Center for Education Statistics.
- Federal Aviation Administration. (1987). FAA aviation forecasts, Fiscal years 1987-1998. Washington, DC: U.S. Government Printing Office.
- Houle, C. O. (1980). Continuing learning in the professions. San Francisco: Jossey-Bass.
- NewMyer, D. A. (1985, September). "Obtaining and Analyzing Aviation Employment Data," Proceedings of the University Aviation Association, Professional Paper Presentations, Auburn, AL: University Aviation Association.
- Spurr, S. H. (1970). Academic degree structures: Innovative approaches, A General Report prepared for the Carnegie Commission on Higher Education. New York: McGraw-Hill.
- The Council on Postsecondary Accreditation and the Council of Graduate Schools in the United States, (1987, May). Accreditation of graduate education: A joint policy statement. Washington, DC: Author.
- University Aviation Association. (1976). Collegiate aviation accreditation guidelines. Auburn, AL: Author.
- Webster, N. (1975). New international dictionary of the english language (2nd ed.). Springfield, MA: Merriam.