



October 18, 2018

Dr. James D. Fielder, Jr.
Secretary of Maryland Higher Education
Maryland Higher Education Commission
6 N. Liberty Street
Baltimore, MD 21201

Dear Dr. Fielder,

Capitol Technology University is requesting approval to offer a **Master of Science (M.S.) in Aviation**. The degree curriculum will be taught using a significant number of existing faculty at our university and will be supplemented by new courses supporting the M.S. in Aviation.

The mission of Capitol Technology University is to provide practical education in engineering, computer science, information technology, and business that prepares individuals for professional careers and affords the opportunity to thrive in a dynamic world. A central focus of the university's mission is to advance practical working knowledge in areas of interest to students and prospective employers within the context of Capitol's degree programs. The university believes that a M.S. in Aviation is consistent with this mission.

The need for highly trained Aviation professionals (i.e., non-pilots and pilots) is growing yearly at a significant rate, but the supply of Aviation professionals is not keeping up with the demand. The faster than average growth is also occurring at the same time that large numbers of existing Aviation professionals are retiring each year. Aviation managers are expected to continue to be in high demand as aviation activity expands over the next decade and beyond. Over the coming decade, the increasing population and business growth will result in the construction of new aviation facilities, airports and airplane manufacturing. The increasing demand, in turn, translates into a growing need for universities and other academic institutions to develop a program that educates the next generation of Aviation professionals at the graduate level.

To respond to needs of the Aviation industry, we respectfully submit for approval a Master of Science (M.S.) in Aviation. The required proposal is attached as well as the letter from me as university president confirming the adequacy of the university's library to serve the needs of the students in this degree.

Respectfully,

A handwritten signature in blue ink, appearing to read 'Bradford L. Sims'.

Bradford L. Sims, PhD



October 18, 2018

Dr. James D. Fielder, Jr.
Secretary of Maryland Higher Education
Maryland Higher Education Commission
6 N. Liberty Street
Baltimore, MD 21201

Dear Dr. Fielder,

This letter is in response to the need for confirmation of the adequacy of the library of Capitol Technology University to support the proposed Master of Science (M.S.) in Aviation. As president of the university, I confirm that the library resources, including support staff, are more than adequate to support the M.S. in Aviation. In addition, the university is dedicated to, and has budgeted for, continuous improvement of its library resources.

Respectfully,

A handwritten signature in blue ink, appearing to read 'BLS', with a stylized flourish at the end.

Bradford L. Sims, PhD



Cover Sheet for In-State Institutions New Program or Substantial Modification to Existing Program

Institution Submitting Proposal	Capitol Technology University
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Each action below requires a separate proposal and cover sheet.

- | | |
|---|---|
| <input checked="" type="radio"/> New Academic Program New | <input type="radio"/> Substantial Change to a Degree Program |
| <input type="radio"/> Area of Concentration New | <input type="radio"/> Substantial Change to an Area of Concentration |
| <input type="radio"/> Degree Level Approval New | <input type="radio"/> Substantial Change to a Certificate Program |
| <input type="radio"/> Stand-Alone Certificate | <input type="radio"/> Cooperative Degree Program |
| <input type="radio"/> Off Campus Program | <input type="radio"/> Offer Program at Regional Higher Education Center |

Department Proposing Program	Department of Astronautical Engineering	
Degree Level and Degree Type	Master of Science (M.S.)	
Title of Proposed Program	Master of Science (M.S.) in Aviation	
Total Number of Credits	36	
Suggested Codes	HEGIS: 510	CIP: 49
Program Modality	<input type="radio"/> On-campus <input checked="" type="radio"/> Distance Education (<i>fully online</i>) <input type="radio"/> Both	
Program Resources	<input checked="" type="radio"/> Using Existing Resources <input type="radio"/> Requiring New Resources	
Projected Implementation Date	<input checked="" type="radio"/> Fall <input type="radio"/> Spring <input type="radio"/> Summer Year: 2019	
Provide Link to Most Recent Academic Catalog	URL: https://www.captechu.edu/current-students/academic-resources	

Preferred Contact for this Proposal	Name: Prof. Soren Ashmall
	Title: Director, Assessment and Accreditation
	Phone: (571) 332-4344
	Email: spashmall@captechu.edu

President/Chief Executive	Type Name: Dr. Bradford Sims
	Signature: Date: 10/18/2018
Approval/Endorsement by Governing Board	Type Name: Dr. Bradford Sims
	Signature: Date: 10/18/2018

Revised 5/15/18

PROPOSAL FOR:

NEW INSTRUCTIONAL PROGRAM

SUBSTANTIAL EXPANSION/MAJOR MODIFICATION

COOPERATIVE DEGREE PROGRAM

WITHIN EXISTING RESOURCES or **REQUIRING NEW RESOURCES**



**CAPITOL
TECHNOLOGY
UNIVERSITY**

1927

Institution Submitting Proposal

Fall 2019

Projected Implementation Date

Master of Science
Award to be Offered

Master of Science in Aviation
Title of Proposed Program

0510.00

Suggested HEGIS Code

49.0104

Suggested CIP Code

Aeronautical Engineering
Department of Proposed Program

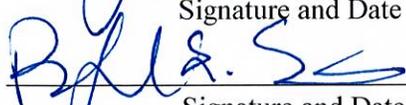
Professor Angela Walters
Name of Department Head

Dr. Helen Barker
Vice President of Academic Affairs

hgbarker@captechu.edu **240-965-2510**
Contact E-Mail Address Phone Number

 10-18-2018
Signature and Date

President/Chief Executive Approval

 10-18-2018
Signature and Date

Date Endorsed/Approved by Governing Board

**Proposed Technical Master of Science in Aviation
Department of Astronautical Engineering
Capitol Technology University
Laurel, Maryland**

A. Centrality to Institutional Mission Statement and Planning Priorities:

- 1. Program description and relationship to university mission and how it relates to the institution's approved mission.**

Master of Science in Aviation Program Description:

The Master of Science (M.S.) in Aviation degree program is designed to meet the growing needs of today's business and government environments where Aviation is now a major business consideration. The M.S. in Aviation provides advanced graduate-level management education where the latest Aviation concepts are reviewed and analyzed with a laser focus. Throughout the program, the latest technological developments, applications, and considerations in the aviation industry are explored and applied to real-life industry challenges. Students will learn optimum methods and techniques to define resources and associated risks at an executive level in order to maintain profitability, manage work effectivity and efficiently, and ensure customer satisfaction.

The M.S. in Aviation will prepare students for advanced management and leadership positions throughout the aviation industry and related businesses. The student will learn to analyze patterns, employ powerful technological tools, and to drive business decisions in the Aviation field. The student will get hands-on use of the strategic-level technology in business and Aviation.

The M.S. in Aviation provides the student with the ability to integrate business and decision-making skills in the technologically complex aviation and business environment. Capitol Technology University graduates will be able to apply their cutting-edge skills in aviation, management, and technology to every day work situations in the industry. While studying Aviation at the graduate level, the student will learn how organizations function effectively and efficiently. Students will develop a clear picture of how business areas meld to create a successful organization. Students will learn the latest technological developments, applications, and considerations in the aviation industry. The required core courses will build a foundation that encompasses technology, management, marketing, accounting, finance, Information Technology and human resource management.

Individuals interested in a career in aviation administration may choose from a wide variety of job titles. The term aviation administration refers to a number of managerial roles in the world of aviation. Aviation administrators may design or manage airports, hold higher-level positions in airport security, work in air traffic control towers or even inspect and evaluate aircraft. Although the term refers to administrators in many divisions within the world of aviation, many aviation administrators work for corporate airlines. In these positions, aviation administrators are often responsible for managing budgets, employment, marketing and other administrative duties, all of which are essential to the success of the airline as a profitable business.

Relationship to Institutional Approved Mission:

The M.S. in Aviation is consistent with the University mission to educate individuals for professional opportunities in engineering, computer science, information technology, and business. We provide relevant learning experiences that lead to success in evolving global community. Fundamental to the degree programs in the Department of Astronautical Engineering are opportunities to integrate technology, leadership, and business. The M.S. in Aviation is consistent with that philosophy. This same philosophy is supported by existing degree programs and learning opportunities. The M.S. in Aviation degree is an integral part of the Strategic Plan for FY 2017-2025 and afterwards. Funding to support the new degree has been included in institutional and departmental budgets for FY 2019-2020 and forecasted budgets going forward.

The degree will be offered online (using the Canvas Learning Management System and Adobe Connect). In addition, the curriculum is supported by the same virtual labs as our current graduate degrees. The result is the convenience required by the 21st Century learner and provides the potential for interaction with faculty and fellow students critical to the high-level learning experience. The curriculum provides students real-world opportunities through labs and case studies, thereby providing the student the necessary practical experience the University believes critical to success in the modern industry and government environments. The degree is consistent with the interdisciplinary nature of the University as well as the fields of aviation and management science.

2. Explain how the proposed program supports the institution's strategic goals and provide evidence that affirms it is an institutional priority.

Capitol Technology University operates on four strategic goals:

- 1. Expand Educational Offerings, Increase Program Completion:** *Capitol Technology University is an institution that offers career-relevant curricula with quality learning outcomes. The strategy includes continuing to expand educational offerings, increasing program completion, and raising learner qualifications and outcomes.*
- 2. Increase Enrollment and Institutional Awareness:** *Capitol will accelerate its goal pursuit to become more globally renowned and locally active through student, faculty and staff activities. Enrollment will grow to 650 undergraduates, 350 masters' students and 250 doctoral candidates.*
- 3. Improve the Utilization of University Resources and Institutional Effectiveness While Expanding Revenue:** *Capitol will likely continue to be 80% financially dependent on student tuition and fees. We plan to enhance our resources by expanding the range and amount of funding from other streams and aligning costs with strategic initiatives.*
- 4. Increase the Number and Scope of Partnerships:** *Capitol's service to our constituents and sources of financial viability both depend upon participation with continuing and new partner corporations, agencies, and schools.*

The new M.S. in Aviation fully supports all the university's four strategic goals. It does so, in part, because of the cross disciplinary nature of the program. The approach builds upon already

successful areas of study, including undergraduate and graduate degrees in Astronautical Engineering, Business Analytics and Decision Sciences, Computer Engineering, Computer Science, Cyber and Information Systems, Cybersecurity, Electrical Engineering, Information Systems Management, Internet Engineering, Management of Cyber and Information Technology, Mobile Computing, Software Engineering, and Technology. Capitol Technology University's programs are structured to teach students the critical leadership, business and technical skills necessary to meet the needs of a modern technology-dependent society. The University's programs have been preparing professionals for rapid advances in technology, intense global competition, and increasingly complex technological environments for decades. The M.S. in Aviation will allow students to elevate their skills and careers to the next level within the evolving global technological business community.

The proposed M.S. in Aviation is fully supported by the University's Vision 2025 and Strategic Plan 2017-2025. Funding to support the degree has been included in forecasted budgets going forward.

The University has active partnerships at the private and public level (e.g., Leidos, Patton Electronics, Lockheed Martin, Northrup Grumman, Cyber Security Forum Initiative, and the IRS). The M.S. in Aviation will provide new opportunities for partnerships as well as new areas for research. Potential partnerships for graduate level internships were identified at the most recent job fair held at the University. The increase in partnerships and placement of our graduate students and graduates in our partner institutions will serve to expand the University's enrollment and reputation. While additional enrollment will increase financial resources, additional partnerships and grants in this field of study will help diversify and increase financial resources.

With a growing demand for leaders within the aviation industry and a shortage of skilled personnel, the need for better prepared aviation industry managers is great. Aviation companies, especially airlines, are searching for leaders with the necessary executive business knowledge in Aviation; those companies are also looking for a reliable pipeline for future leadership hires as well. Graduates with the M.S. in Aviation will help fill this need, making the degree extremely relevant now and in the future.

3. Provide a brief narrative of how the proposed program will be adequately funded for at least the first five years of program implementation. (Additional related information is required in section L.)

Capitol Technology University has reallocated funds during Year 1 for support of the program and course development, online support, office materials, travel, professional development, and initial marketing. There is no substantial impact on the institution because of the reallocation of these funds. The reallocated funds will be recovered after the first year. The program is expected to be self-sustaining after Year 1.

4. Provide a description of the institution's a commitment to:

a. Ongoing administrative, financial, and technical support of the proposed program

The proposed degree is an integral part of the University's Strategic Plan for FY 2017-2025 and forward. Funding for the administrative, financial, and technical support of the new degree has been included in the institutional and departmental budgets for FY 2019-2020 as well as the forecasted budgets going forward.

- b. **Continuation of the program for a period of time sufficient to allow enrolled students to complete the program.**

Capitol Technology University is fully committed to continuing the proposed M.S. in Aviation degree program for a period of time sufficient to allow enrolled students to complete the program.

B. Critical and Compelling Regional or Statewide Need as Identified in the State Plan:

1. **Demonstrate demand and need for the program in terms of meeting present and future needs of the region and the state in general based on one or more of the following:**

- a. **The need for advancement and evolution of knowledge.**

Leaders in the aviation industry are facing an ever-increasing need to expand the application of new technology to their industry in order to remain competitive, efficient, and viable now and in the future. Aviation companies today depend and thrive on timely, accurate and relevant information. As technology enables the creation and capture of ever-increasing amounts of data, the effective management and understanding of resource needs is becoming an enormous challenge. Aviation is no longer just the task of flying airplanes; it is far reaching implications in the global, environmental, integration, and security aspects of society. Effective leadership in this industry can only be achieved with a holistic approach and the advanced skills that will be covered in this proposed degree.

- b. **Societal needs, including expanding educational opportunities and choices for minorities and educationally disadvantaged students at institutions of higher education.**

Capitol Technology University is a diverse multiethnic and multiracial institution with a long history of serving minority populations. The University has a 51% minority student population with 7% undisclosed. The Black/African American population is 34%. The university has military/veteran population of 22%. The University also has a 22% female population – a significant percentage given its status as a technology institution. If approved, the proposed M.S. in Aviation Management will expand the field of opportunities for minorities and disadvantaged students.

The need for highly trained Aviation professionals (both pilots and non-pilots) is growing at a significant rate, but the supply of Aviation professionals is not keeping up with the demand. According to The Bureau of Labor Statistics Occupational Outlook Handbook, the Job Outlook for Aviation Managers from 2016-2026 is projected to have faster than average growth of 11% -- a need for 44,800 new Aviation Managers. The faster than average growth is also occurring globally with the demand in East Africa leading the world.

(Source: <https://www.bls.gov/ooh/management/aviation-managers.htm>)

(Source: <https://www.bls.gov/ooh/management/administrative-services-managers.htm>)

(Source: <https://www.bls.gov/ooh/management/top-executives.htm>)

Aviation Managers are expected to be in high demand as overall aviation activity expands. Over the coming decade, increasing population and business growth will result in the construction of new aviation facilities, airports and airplane manufacturing. Also, the need to

improve portions of the national infrastructure of airports and aviation facilities will spur employment growth as these are upgraded or replaced.

Higher education and experience requirements make skills gaps hard to close. Because Aviation jobs require years of training and relevant experience, skills gaps cannot easily be resolved through short-term solutions. Employers and training providers must work together to cultivate a talent pipeline for these critical roles.

c. The need to strengthen and expand the capacity of historically black institutions to provide high quality and unique educational programs.

While Capitol Technology University is not a historically black institution, the university is a diverse multiethnic and multiracial institution with a long history of serving minority populations. The University has a 51% minority student population with 7% undisclosed. The Black/African American population is 34%. The University has military/veteran population of 22%. The university also has a 22% female population – a significant percentage given its status as a technology institution. If approved, the proposed B.S. in Aviation Management will expand the field of opportunities for minorities and disadvantaged students.

A report from the Business-Higher Education Forum notes that African Americans and Hispanics represent just 6 and 7% respectively of STEM employment, even though they represent more than twice that much of the U.S. population.”

Industry	2017				
	Percent of total employed				
	Women	White	Black or African American	Asian	Hispanic or Latino
Aviation	9.1	88.8	6.1	1.9	29.8

(Source: <https://www.bls.gov/cps/cpsaat18.htm>)

2. Provide evidence that the perceived need is consistent with the Maryland State Plan for Postsecondary Education.

The 2017-2021 Maryland State Plan for Postsecondary Education articulates three goals for postsecondary education:

1. Access
2. Success
3. Innovation

Goal 1: Access

“Ensure equitable access to affordable and quality postsecondary education for all Maryland residents.”

Capitol Technology University is committed to ensuring equitable access to affordable postsecondary education for all Maryland residents. The University meets its commitment in this arena through its diverse campus environment, admissions policies, and academic rigor.

The Capitol Technology University community is committed to creating and maintaining a mutually respectful environment that recognizes and celebrates diversity among all students, faculty, and staff. The University values human differences as an asset and works to sustain a culture that reflects the interests, contributions, and perspectives of members of diverse groups. The University delivers educational programming to meet the needs of diverse audiences. We also seek to instill those values, understanding, and skills to encourage leadership and service in a global multicultural society.

The University’s commitment to diversity is reflected in its student body. Capitol Technology University has a 51% minority student population with 7% undisclosed. The Black/African American population is 34%. The university has military/veteran population of 22%. The university also has a 22% female population – a significant percentage given its status as a technology university.

Achievement gaps: The University provides leveling courses in support of individuals attempting a career change to a field of study not necessarily consistent with their current skills. There are situations where additional graduate and/or undergraduate courses best serve student needs in subject areas. The University makes those courses available.

The University engages in diversity training for its institutional population, including students. Diversity and inclusiveness are built in to the curriculum allowing graduates to operate effectively in a global environment. The University supports multiple diversity enhancing actions, including team projects and grants across degrees. This approach has proven effective at supporting multiple aspects of diversity.

Capitol Technology University does not discriminate on the basis of race, color, national origin, sex, age, sexual orientation, or handicap in admissions, employment, programs, or activities.

Through its academic programs, Capitol Technology University seeks to prepare all its graduates to demonstrate four primary characteristics:

- **Employability:** *The ability to enter and advance in technical and managerial careers, appropriate to their level and area of study, immediately upon graduation.*
- **Communications:** *Mastery of traditional and technological techniques of communicating ideas effectively and persuasively.*
- **Preparation of the Mind:** *The broad intellectual grounding in technical and general subjects required to embrace future technical and managerial opportunities with success.*
- **Professionalism:** *Commitment to life-long learning, ethical practice and participation in professions and communities.*

The proposed M.S. in Aviation program and university financial aid will be available to all Maryland residents who qualify academically for admission.

The M.S. in Aviation program, with its academic rigor, will produce highly qualified Aviation professionals for this critical field of study and employment. The University has a proven record of rigorous high-quality education. The University is fully accredited by three accrediting organizations. In addition to regional accreditation from the Middle States Commission on Higher Education (MSCHE), the university also has specialized accreditation from the International Accreditation Council of Business Education (IACBE) and Accreditation Board for Engineering and Technology (ABET). The Aviation program is consistent with the MSCHE criteria for regional accreditation of the delivery of high quality higher education as well as the specialized IACBE accreditation requirements.

Goal 2: Success

“Promote and implement practices and policies that will ensure student success.”

The courses for the M.S. in Aviation will be offered online. This modality provides learning opportunities for students unable or unwilling to attend an on-campus institution of higher education. The University provides a tuition structure that is competitive with its competitors. The University tuition structure does not differentiate between in-state and out-of-state students. Student services are designed to provide advising, tutoring, virtual job fair attendance, and other activities supporting student completion and employment for both on-ground and online students.

Students receive information throughout the admissions process regarding the cost to attend the University. The information is also publicly available on the University website. The University’s Admissions Office and Office of Financial Aid identify potential grants, scholarships, and state plans for each student to reduce potential student debt. The net cost versus gross costs are identified clearly for the student. Students receive advising from Financial Aid Advisors prior to enrolling in classes for the first time. Admissions personnel, Student Services Counselors and Departmental Chairs advise students of the need for academic readiness as well as the degree requirements. A specific success pathway is developed for each student.

The University’s tuition increases have not exceeded 3%. The University also has a tuition lock, which means full-time tuition is locked at the rate applied at time of enrollment. The tuition remains at this rate if the student remains enrolled full-time without a break in attendance.

The University has in place services and learning tools to guide students to successful degree completion. Programs such as Early Alert provide the University’s faculty and staff opportunities for early student intervention on the pathway to graduation. This applies to all students regardless of the mode of course delivery or degree program. Capitol Technology University is also a transfer friendly institution and participates in multiple programs for government and military credit transfer. Capitol Technology University participates in the Articulation System for Maryland Colleges and Universities (ARTSYS) and has multiple transfer agreements with local institutions at all degree levels.

The University has in place services, tutoring, and other tools to help ensure student graduation and successful job placement. The University hosts a career (job) fair twice a year. The University has an online career center available to all students covering such topics as career exploration, resume writing, job search techniques, social media management, mock interviews, and assistance interpreting job descriptions, offers, and employment packages.

The University also works with its advisory boards, alumni, partners, and faculty to help ensure the degrees offered at the University are compatible with long-term career opportunities in support of the state's knowledge-based economy.

Goal 3: Innovation

“Foster innovation in all aspects of Maryland higher education to improve access and student success.”

Capitol Technology University's past, present, and future is inextricably intertwined with innovation. The University has a long tradition of serving as a platform for the use of new and transformative approaches to delivering higher education. New technology and cutting-edge techniques are blended with proven strategies with the goal of enabling student success in all classroom modalities as well as in a successful career after graduation. As a small institution, Capitol Technology University has the agility to rapidly integrate new technologies into the curriculum to better prepare students for the work environment. The University designs curriculum in alliance with its accreditation and regulating organizations and agencies.

The University also employs online virtual simulations in a game-like environment to teach the application of knowledge in a practical hands-on manner. The University is engaged with a partner creating high-level virtual reality environments for specific courses in the degree. This use of current technology occurs in parallel with traditional proven learning strategies. These elements of the University's online learning environment are purposeful and intended to improve the learning environment for both the student and faculty member. In addition, these elements are intentionally designed to increase engagement, improve outcomes, and improve retention and graduation rates. The University believes that innovation is the key to successful student and faculty engagement.

Example: The University engages its students in 'fusion' projects, which allows students to contribute their skills in interdisciplinary projects such as those in our Astronautical Engineering and Cyber Labs. In those labs, students become designers, builders, and project managers (e.g., to send a CubeSAT on a NASA rocket) and data analysts (e.g., to analyze rainforest data for NASA). We are recruiting partners for this proposed M.S. degree in Aviation for which real-world Aviation projects will provide students integrative learning opportunities.

The University also supports prior learning assessment. Portfolio analysis is available. The University accepts professional certifications for credit for specific courses. In addition, the University allows students to take a competency exam for credit for required courses up to the current state limits.

C. Quantifiable and Reliable Evidence and Documentation of Market Supply and Demand in the Region and State:

1. Describe potential industry or industries, employment opportunities, and expected level of entry (ex: mid-level management) for graduates of the proposed program.

Opportunities exist in government, private industry, and cross-sector organizations for professionals with the proposed M.S. in Aviation. There are currently 2,722 jobs listed on glassdoor.com under the Aviation Manager field.

(Source:

<https://www.glassdoor.com/Job/jobs.htm?suggestCount=0&suggestChosen=false&clickSource=searchBtn&typedKeyword=aviation+manager&sc.keyword=aviation+manager&locT=&locId=&jobType=>)

Graduates with the M.S. in Aviation will be expected to fill mid-level management positions in existing commercial companies and government organizations with titles such as:

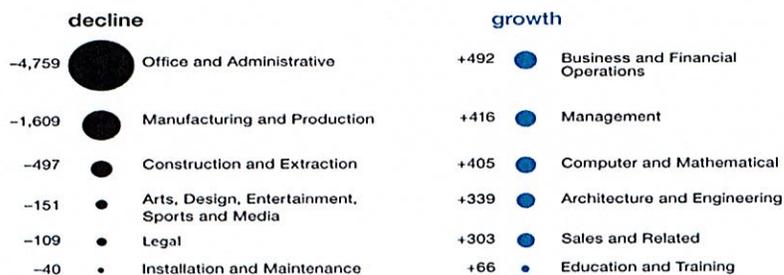
- Assistant Vice President, Aviation
- Director, Operations
- Vice President, Avionics
- Managing Director, Aviation
- Corporate Marketing Officer
- Aviation Industry Senior Strategist
- Aviation Business Development Consultant

Graduates will also possess the required knowledge in Aviation to serve as a subject matter expert and form their own private company.

2. Present data and analysis projecting market demand and the availability of openings in a job market to be served by the new program.



**Employment outlook across job families
jobs change in thousands, 2015-2020**



Across major economies - see report for full list.
Source: Future of Jobs Report, World Economic Forum

The dramatic growth in the aviation industry is increasing the demand for Aviation professionals. The aviation industry is thriving as the economy continues to grow and the effect of the recent reduction in the corporate tax rate to 21% is beginning to be felt across the sector.

“All signs and numbers point to a huge year for the aviation industry. Even in December, with much of the nation frozen, the aviation industry added 30,000 jobs, according to the Bureau of Labor Statistics.

The projected need of aviation managers with degrees is high just in the United States.

Employment projections data for administrative services managers, 2016-26

Occupational Title	SOC Code	Employment, 2016	Projected Employment, 2026	Change, 2016-26	
				Percent	Numeric
Administrative services managers	11-3011	281,700	310,200	10	28,500

SOURCE: U.S. Bureau of Labor Statistics, Employment Projections program

Long Term Occupational Projections (2014-2024) by State

Area	Title	Base	Projected	Change	% Change	Avg. Anl Openings
Maryland	Administrative Service	6,930	8,370	1,440	20.9	260
Virginia	Administrative Service	4,380	4,820	440	10.1	130
District of Columbia	Administrative Service	1,880	1,980	100	5.6	50
Pennsylvania	Administrative Service	8,360	8,930	570	6.8	210

(Source: <http://www.projectionscentral.com/Projections/LongTerm>)

A September 12, 2018 job search of openings for aviation management positions with degrees listed 7,644 jobs indicating the demand of these needed executives.

(Source: <https://www.indeed.com/jobs?q=aviation+management&l=>)

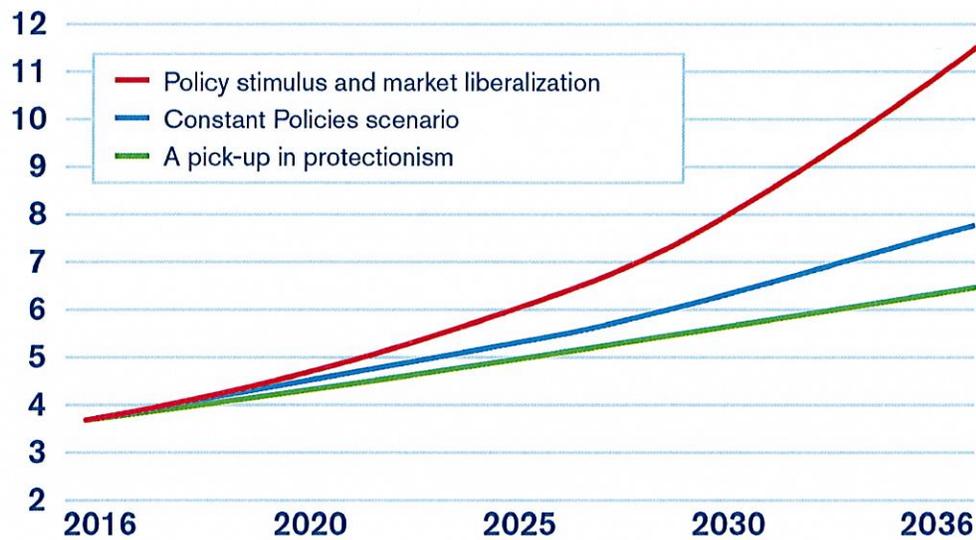
The urgent need for more properly trained Aviation Management professionals in the worldwide aviation industry was described in a recent article by the International Air Transport Association (IATA).

The International Air Transport Association (IATA) expects 7.8 billion passengers to travel in 2036, a near doubling of the 4 billion air travelers expected to fly this year. The prediction is based on a 3.6% average Compound Annual Growth Rate (CAGR) noted in the release of the latest update to the association’s 20-Year Air Passenger Forecast (<https://www.iata.org/publications/store/Pages/20-year-passenger-forecast.aspx>).

“All indicators lead to growing demand for global connectivity. The world needs to prepare for a doubling of passengers in the next 20 years. It’s fantastic news for innovation and prosperity, which is driven by air links. It is also a huge challenge for governments and industry to ensure we can successfully meet this essential demand,” said Alexandre de Juniac, IATA’s Director General and CEO.

Planning for growth will require partnerships to be strengthened between the aviation industry, communities and governments to expand and modernize infrastructure. Runways, terminals, and ground access to airports will come under increasing strain. Innovative solutions to these challenges, as well as to the baggage and security processes, cargo handling, and other activities, will also be needed. And air traffic management needs urgent reform to cut delays, costs and emissions. Most of all, the human capital to support the operations of all the change must be educated and trained to enter this vastly growing field.

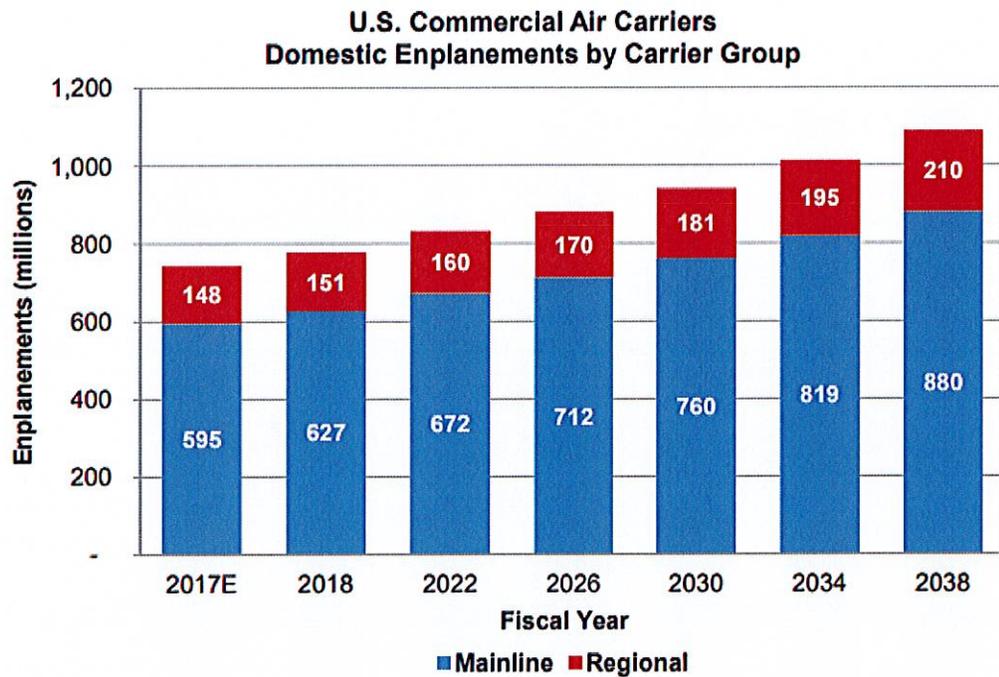
Global Passengers (billion, segment basis)



(Source: <https://www.iata.org/pressroom/pr/Pages/2017-10-24-01.aspx>)

Mainline and regional carriers¹ offer domestic and international passenger service between the U.S. and foreign destinations, although regional carrier international service is confined to the border markets in Canada, Mexico, and the Caribbean.

The commercial air carrier industry in 2018 will be shaped by four distinct trends: (1) easing capacity discipline; (2) steady growth of seats per aircraft, whether through up-gauging or reconfiguring existing aircraft; (3) increasing competitive pressure due to ultralow-cost carrier expansion; and (4) continued reliance on ancillary revenues. Overall, the industry will experience continued growth and increased travel demand.



(Source: https://www.faa.gov/data_research/aviation/aerospace_forecasts/media/FY2018-38_FAA_Aerospace_Forecast.pdf)

Total passengers (including Foreign Flag carriers) between the United States and the rest of the world increased an estimated 5.4 percent in 2017 (231.9 million) as all regions posted gains led by a 6.4 percent increase in the Atlantic region.

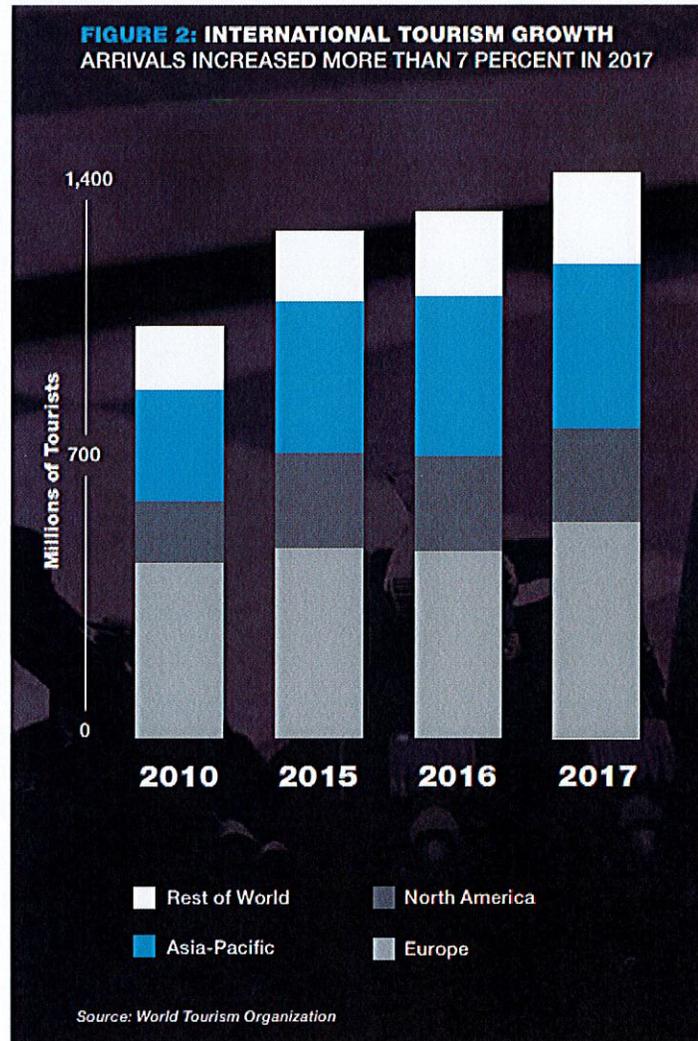
FAA projects total passenger growth of 5.2 percent in 2018 as global economic growth accelerates with the highest growth expected in the Latin region. Stable global economic growth averaging 2.9 percent a year over the next 20 years (2018-2038) is the foundation for the forecast growth of international passengers of 3.5 percent a year, as levels double from 244 million to 486 million.

3. Discuss and provide evidence of market surveys that clearly provide quantifiable and reliable data on the educational and training needs and the anticipated number of vacancies expected over the next 5 years.

Aviation is a dynamic industry that is constantly affected by and reacts to varying economic and socio-political factors. The three key demands that are shown in all forecasts include the underlying increase in demand for air travel, the changes in regulatory requirements, and evolving technology advancements.

Year-over-year traffic growth averaged 6.5 percent during the past five years, setting a pace that exceeded the long-term average of around 5 percent. Low air fares, higher living standards with a growing middle class in large emerging markets, the growth of tourism and travel relative to total consumer spending in major economies, and new airline business models are all driving this boom in air travel.

Within the services sector of the global economy, consumer spending on travel and tourism continues to grow. According to the World Tourism Organization, international tourist arrivals grew 7.1 percent in 2017, faster than overall GDP growth. Like air passenger traffic, overall tourism has grown substantially, with almost 350 million more international tourists in 2017 than 2010. This trend is projected to continue, with the direct contribution of tourism and travel to global GDP expected to grow 4 percent per year in real terms in the next 10 years, according to the World Tourism and Travel Council. The outlook for strong air travel demand is consistent with broad consumer demand trends and travel and tourism outlooks.



(Source: <http://www.boeing.com/resources/boeingdotcom/commercial/market/commercial-market-outlook/assets/downloads/2018-cmo-08-18.pdf>)

After analyzing hundreds of aviation industry survey responses, aviation jobs site JSfirm.com predicted 2018 would see a doubling of aviation industry job growth compared to 2017. Seventy-one percent of the 387 companies that responded to the

firm's Hiring Trends Survey projected moderate to significant growth, compared to 33 percent that responded similarly in 2017.

(Source: <https://www.aopa.org/news-and-media/all-news/2018/march/13/jsfirmcom-survey-predicts-aviation-industry-growth>)

Boeing is the world's largest producer of Airliners, and every year they take an objective look at the future of the airline business. This report is called Boeing's Commercial Market Outlook and it is based on current firm orders for its aircraft. The Commercial Market Outlook is the single most accurate projection of what the airline industry is going to be for the next 20 years.

In the latest edition of the Outlook, Boeing states:

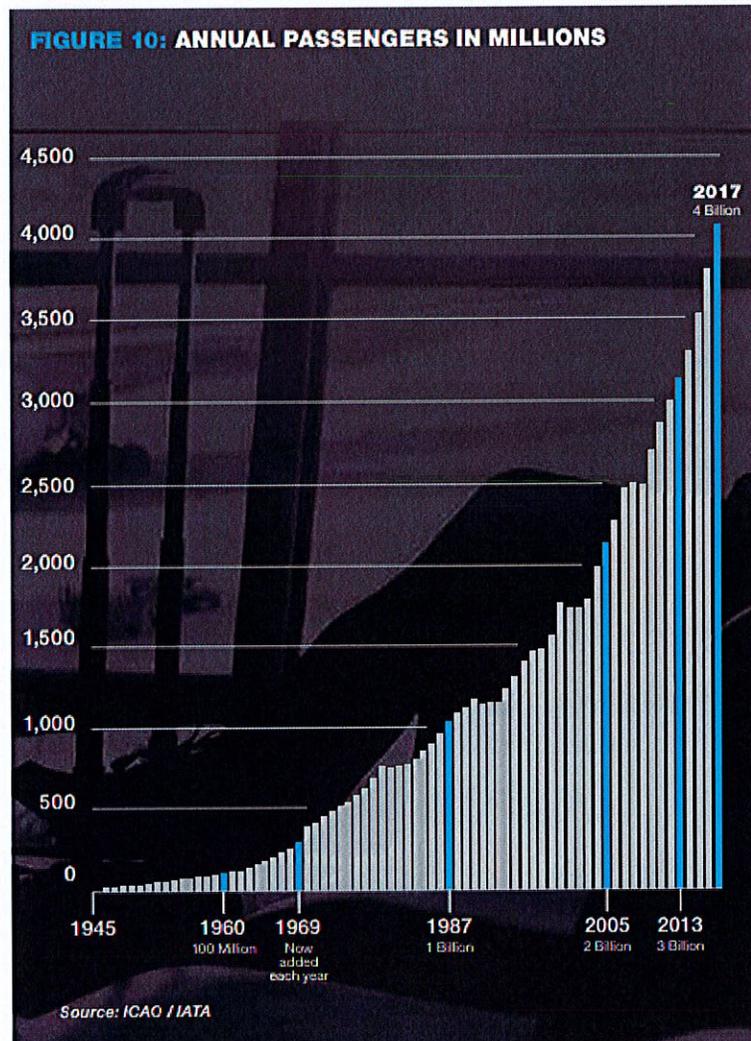
Over the past 20 years, air travel grew by an average of 4.8 percent each year. This was despite two major world recessions, major terrorist acts, the Asian financial crisis of 1997, the Severe Acute Respiratory Syndrome (SARS) outbreak in 2003 and two Gulf wars. During 40 years of producing the Current Market Outlook, we have learned that the resilience of air transport growth comes from its importance to the livelihood of people around the world.

On average over the next 20 years, passenger travel will grow at 5.0 percent and cargo at 5.8 percent. The fastest growing economies will lead the transformation into a more geographically balanced market.

A record 31 percent of our forecast for airplanes with more than 100 seats is already on firm order (7,900 aircraft), so we have unprecedented visibility of future airplane requirements, giving more certainty to the shape of our forecast.

(Source: <http://boeing.mediaroom.com/2018-07-17-Boeing-Forecasts-15-Trillion-Commercial-Airplanes-and-Services-Market>)

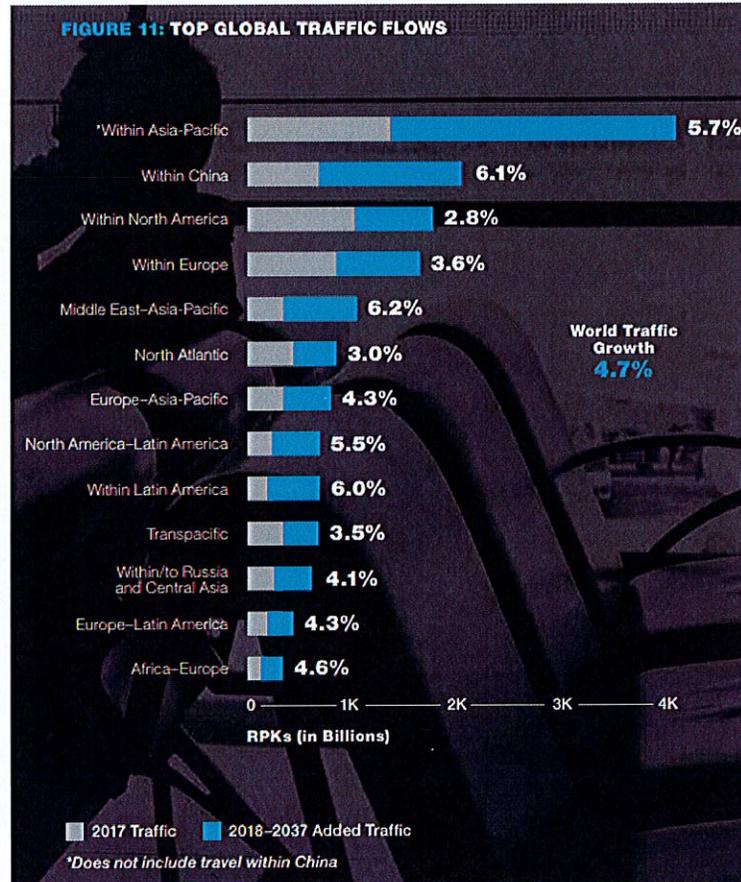
Air travel has proven to be a resilient market, and robust growth is expected to continue in the future. As the industry evolved from its infancy in the 1940s through the dawn of the jet age, the number of passengers traveling annually grew from about 100 million in 1960 to just over 1 billion in 1987. It took 18 years to double to 2 billion passengers, and only 7 more years to grow to 3 billion. The upward trajectory is expected to continue.



(Source: <http://www.boeing.com/resources/boeingdotcom/commercial/market/commercial-market-outlook/assets/downloads/2018-cmo-08-18.pdf>)

Demand in the commercial market is forecast to more than double in the next two decades. To meet this demand, we forecast the number of jet airplanes will nearly double to 48,000, at an average annual growth rate of 3.5 percent. To support this fleet growth, Boeing forecasts a need for more than 42,700 new deliveries, valued at over \$6 trillion, for growth and replacement in the next 20 years. Single-aisle airplanes command the largest share of new deliveries at more than 70 percent, with airlines needing more than 31,300 in the next 20 years. These new airplanes will continue to stimulate growth and provide required replacements for older, less-efficient airplanes. In addition, more than 9,000 new widebody airplanes will be delivered, allowing airlines to serve new markets—passenger and car - go—more efficiently than in the past.

In light of the above factors, we view recent performance as evidence of real demand, not a bubble prone to burst in subsequent years. Our forecast traffic growth remains healthy, with an average RPK growth rate of 4.7 percent per year over 20 years.

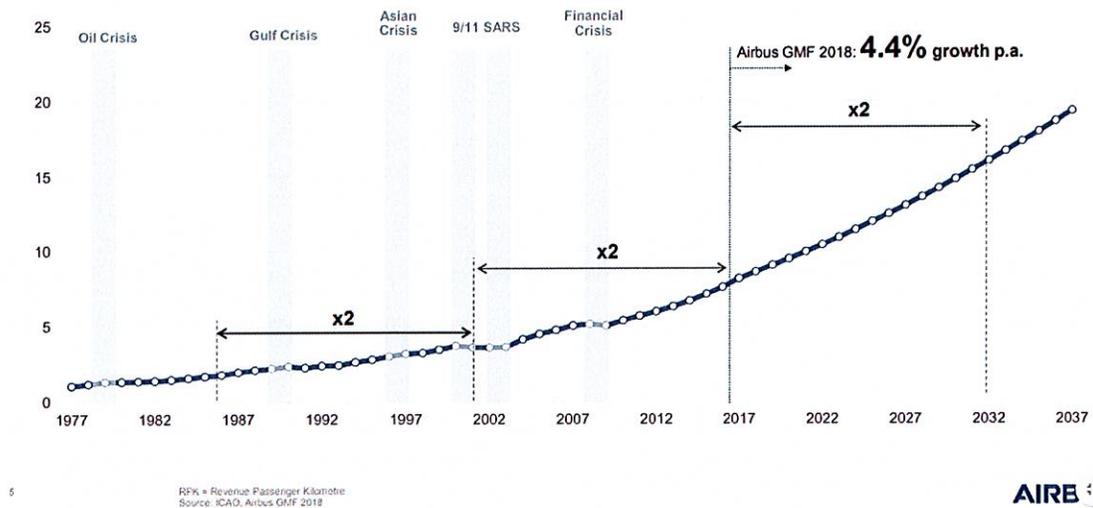


(Source: <http://www.boeing.com/resources/boeingdotcom/commercial/market/commercial-market-outlook/assets/downloads/2018-cmo-08-18.pdf>)

Overall, the aviation industry, and largest employers of Aviation managers, continues to rebound from any adverse effects and, over time, doubles approximately every 15 years. This projects tremendous growth and opportunities for the industry and for the Aviation Management professionals who operate the complex air travel system to have a shining and rewarding future.

Traffic has proven to be resilient to external shocks and doubles every 15 years

World annual traffic (trillion RPKs)

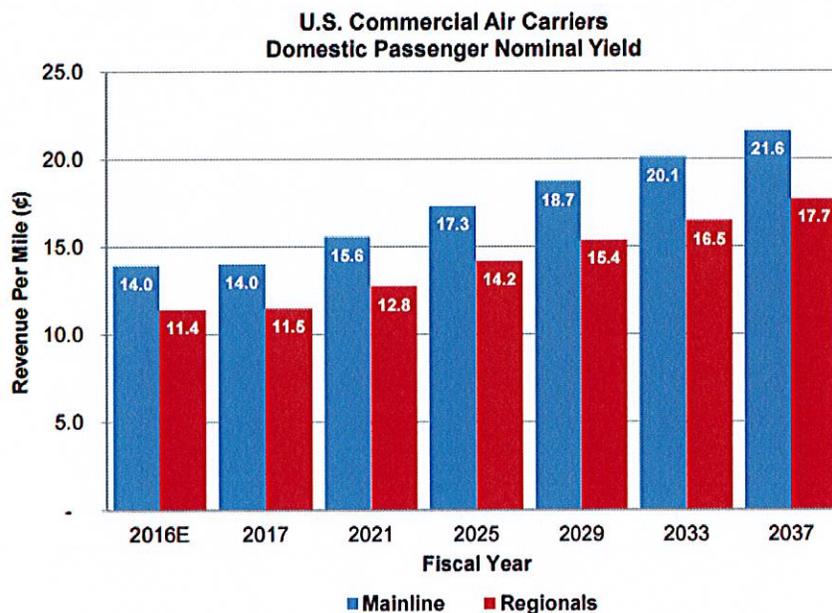


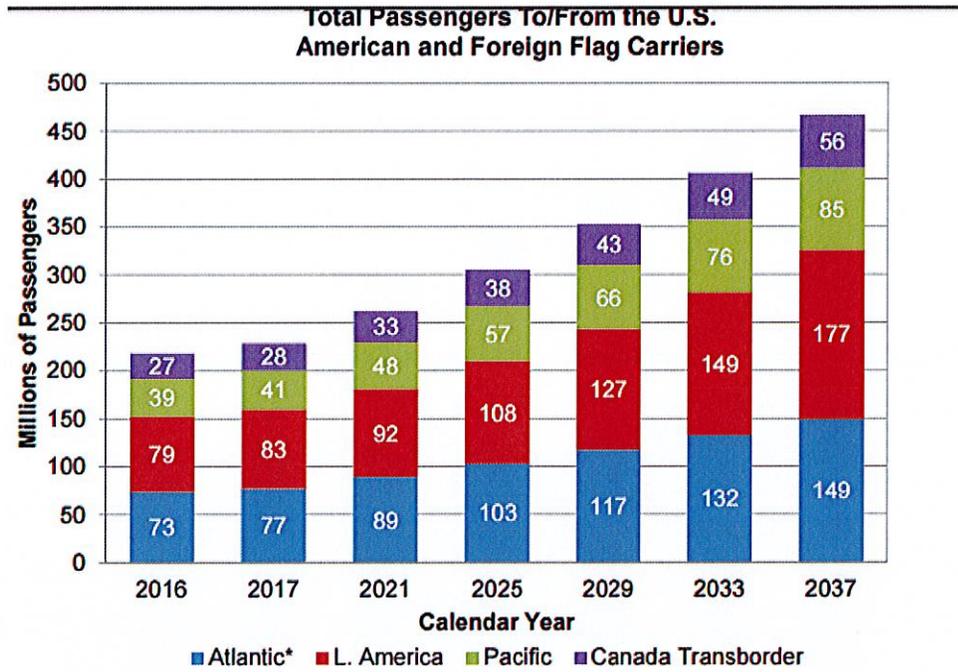
(Source: <https://www.airbus.com/aircraft/market/global-market-forecast.html>)

4. Data showing the current and projected supply of prospective graduates.

For industry positions of needed degreed managers continue to rise to support the demands of the airline industry as growth continues in manufacturing, airline travel, airports, cargo, and related government agencies as noted in a recent FAA report.

(Source: https://www.faa.gov/data_research/aviation/aerospace_forecasts/media/FY2017-37_FAA_Aerospace_Forecast.pdf)





Source: US Customs & Border Protection data processed and released by Department of Commerce; data also received from Transport Canada
 * Per past practice, the Mid-East region and Africa are included in the Atlantic category.

D. Reasonableness of program duplication:

- 1. Identify similar programs in the State and/or same geographical area. Discuss similarities and differences between the proposed program and others in the same degree to be awarded.**

There are no master’s degrees in Aviation Science in Maryland or the surrounding region that the university could find. If approved, Capitol Technology University’s M.S. in Aviation will position its graduates to fill the requirement for managers and senior leaders in the aviation industry in Maryland and the region.

- 2. Provide justification for the proposed program.**

The program is strongly aligned with the University’s strategic priorities and is supported by adequate resources. The new M.S. in Aviation will strengthen and expand upon existing graduate degree programs at the University. The degree will represent study in a rapidly changing and expanding discipline. Research shows a current and growing shortage of Aviation leaders who are experts in technology directly related to their profession. There is a thorough discussion of the need in sections B and C of this document.

E. Relevance to high-demand programs at Historically Black Institutions (HBIs):

- 1. Discuss the program's potential impact on the implementation or maintenance of high-demand programs at HBIs.**

The University is not aware of any similar high-demand programs at the Maryland HBIs.

F. Relevance to the identity of Historically Black Institutions (HBIs):

- 1. Discuss the program's potential impact on the uniqueness and institutional identities and missions of HBIs.**

The University is not aware of any impact on the uniqueness and institutional identities and missions of Maryland HBIs.

G. Adequacy of Curriculum Design, Program Modality, and Related Learning Outcomes (as outlined in COMAR 13B.02.03.10):

- 1. Describe how the proposed program was established, and also describe the faculty who will oversee the program.**

The proposed program was established through a rigorous review of unmet needs by the University's New Programs Group. The group includes selected representation from the faculty, administrators, and Executive Council. The program will be overseen by a diverse group of faculty members with backgrounds in civil engineering, cybersecurity, aviation science and management, mechanical engineering, environmental engineering, architectural engineering, strategic studies, aviation technology, and business. Please see Section I for a detailed list of the faculty's backgrounds.

- 2. Describe educational objectives and learning outcomes appropriate to the rigor, breadth, and (modality) of the program.**

Educational Objectives:

- Students will critically analyze problems in a variety of disciplines and synthesize relevant information to support the attainment of desired outcomes.
- Students will identify, formulate, and solve complex aviation and management problems by selecting and applying appropriate tools and techniques.
- Students will identify and synthesize problems in aviation processes, communications, methods, materials, systems, equipment, planning, scheduling, safety, economics, accounting, cost analysis and control, decision analysis, and optimization in order to develop optimum solutions.
- Students will conceptualize, apply and integrate effective strategies to use information effectively in the decision-making process.
- Students will evaluate executive decisions in the context of the modern aviation industry and business environment to determine the potential impact on resources and profitability.
- Students will evaluate the legal, social, economic, environmental, and global ramifications of leadership actions and business decisions within the aviation industry.

Learning Outcomes:

Upon graduation:

- a. Graduates will critically analyze problems within the aviation industry, synthesize the relevant information, and formulate solutions to attain desired outcomes.
- b. Graduates will demonstrate highly-developed traditional and technological techniques and skills in communicating ideas effectively and persuasively.
- c. Graduates will evaluate the legal, social, economic, environmental, and global ramifications of their leadership actions and business decisions in the aviation industry.
- d. Graduates will integrate advanced knowledge of Aviation in the application of concepts, plans, processes, project management, and team leadership skills on the job.
- e. Graduates will identify, formulate, and solve complex aviation problems by selecting and applying appropriate tools and techniques.
- f. Graduates will demonstrate advanced knowledge of finance and contract management, organizational behavior, the impact of technology, personnel management, and technology-enabled operations in an integrated manner within the aviation industry.

3. Explain how the institution will:

a) provide for assessment of student achievement of learning outcomes in the program

Capitol Technology University will assess student achievement of the learning outcomes per the regulations specified by two of the university's accreditation organizations -- the Middle States Commission on Higher Education (MSCHE) and the International Accreditation Council for Business Education (IACBE).

Under MSCHE, the University will use Standard V, Educational Effectiveness Assessment, of the Standards for Accreditation and Requirements of Affiliation. Standard V requires:

Assessment of student learning and achievement demonstrates that the institution's students have accomplished educational goals with their program of study, degree level, the institution's mission, and appropriate expectations for institutions of higher education.

(Source: <https://www.msche.org/?Nav1=About&Nav2=FAQ&Nav3=Question07>)

Per the MSCHE's accreditation requirements, Capitol Technology University will measure Standard V by using the following criteria:

An accredited institution possesses and demonstrates the following attributes or activities:

1. clearly stated educational goals at the institution and degree/program levels, which are interrelated with one another, with relevant educational experiences, and with the institution's mission;
2. organized and systematic assessments, conducted by faculty and/or appropriate professionals, evaluating the extent of student achievement of institutional and degree/program goals. Institutions should:

- a. define meaningful curricular goals with defensible standards for evaluating whether students are achieving those goals;
- b. articulate how they prepare students in a manner consistent with their mission for successful careers, meaningful lives, and, where appropriate, further education. They should collect and provide data on the extent to which they are meeting these goals;
- c. support and sustain assessment of student achievement and communicate the results of this assessment to stakeholders;

3. consideration and use of assessment results for the improvement of educational effectiveness. Consistent with the institution's mission, such uses include some combination of the following:

- a. assisting students in improving their learning;
- b. improving pedagogy and curriculum;
- c. reviewing and revising academic programs and support services;
- d. planning, conducting, and supporting a range of professional development activities;
- e. planning and budgeting for the provision of academic programs and services;
- f. informing appropriate constituents about the institution and its programs;
- g. improving key indicators of student success, such as retention, graduation, transfer, and placement rates;
- h. implementing other processes and procedures designed to improve educational programs and services;

4. if applicable, adequate and appropriate institutional review and approval of assessment services designed, delivered, or assessed by third-party providers; and

5. periodic assessment of the effectiveness of assessment processes utilized by the institution for the improvement of educational effectiveness.

(Source: <https://www.msche.org/publications/RevisedStandardsFINAL.pdf>)

Under IACBE, the University will also use IACBE's Assessment Pyramid to assess student achievement of the learning outcomes in the program:

The Assessment Pyramid below illustrates the general hierarchical relationships among mission, goals, outcomes, and objectives:

The Assessment Pyramid



The Assessment Pyramid represents the flow from the institutional mission at the apex of the pyramid, which provides purpose and direction for the institution as a whole, followed by the mission of the academic business unit (and other academic units of the institution), and then down to the broad-based goals of the business unit, followed by intended outcomes, and then finally down to performance objectives associated with the intended outcomes at the base of the pyramid.

The widening and downward flow from the institutional mission in this hierarchical structure indicates that:

- The mission of the academic business unit flows from the institutional mission and should be consistent with and contribute to the institutional mission.
- The broad-based goals flow from the mission of the academic business unit with multiple goals associated with the business unit's mission and each goal relating to some aspect of the mission.
- Intended outcomes flow from the broad-based goals with multiple intended outcomes associated with each goal.
- Performance objectives flow from the intended outcomes with multiple objectives associated with each intended outcome.
- Consequently, evidence of accomplishment of desired results at a given level in the pyramid hierarchy would then constitute evidence of accomplishment of the desired results in the level above it.

Institutional and Academic Business Unit Mission

The institutional mission statement is a concise statement that defines the general purpose of the institution as a whole, provides direction for all of its activities and operations, and guides decision making for all of its academic and non-academic functional units. Similarly, the academic business unit mission statement provides direction for and guides decision making of the academic business unit. Furthermore, the mission of the business unit should be consistent and consonant with the institutional mission in the sense that each element of the business unit's mission should be associated with and contribute to

some aspect of the institutional mission.

Broad-Based Goals vs. Intended Outcomes

Goals and intended outcomes are similar in that they describe desired results of the various activities of the business unit and establish the foundation for assessment. The difference between the two lies in the degree of specificity and measurability.

Goals are broad, clear, and general statements of what the academic business unit intends to accomplish in terms of student learning and operational effectiveness. They describe the general aims and aspirations of the business unit and provide the general framework for determining the more specific intended outcomes for the unit. In addition, they should be consistent with the academic business unit's mission in the sense that each broad-based goal should be associated with, contribute to, and mapped to some aspect of the unit's mission.

The main function of the goals is to provide a link between the academic business unit's broadly-stated mission and the more specific intended outcomes for the unit (as described in the discussion of the pyramidal structure above). The broad-based goals then become a blueprint for implementing the business unit's mission and for developing measurable intended outcomes relating to student learning and operational effectiveness. Goals are generally too broadly stated in order to be measurable in and of themselves. Therefore, intended outcomes need to be articulated in order to make the goals specific and to describe what the goals actually mean, i.e., in order to be able to determine the extent to which the goals have been met.

Intended outcomes are clear statements that describe in precise and measurable terms the specific, observable, and desired results pertaining to student learning and the operational effectiveness of the academic business unit. They flow from the academic business unit's broad-based goals and represent what students must specifically learn and what the academic business unit must achieve operationally in order to accomplish these goals. Consequently, each broad-based goal will usually have multiple intended outcomes associated with it. In addition, a particular intended outcome can support or contribute to the accomplishment of more than one goal.

Intended Outcomes vs. Performance Objectives

Once intended outcomes have been developed, the academic business unit must specify the ways in which it will measure the extent to which students and the business unit are achieving the intended outcomes. In other words, the specific instruments, tools, and metrics that will be used to assess the intended outcomes must be determined.

Whereas intended outcomes are expressed in terms of the specific knowledge, skills, and abilities that students are expected to acquire and in terms of the desired operational results of the academic business unit, performance objectives on the other hand are the desired quantitative performance results (or performance targets) on the assessment instruments, tools, and metrics that are used to measure the intended outcomes.

So, for example, if an academic business unit has defined an intended student learning outcome relating to the global dimensions of business and is measuring this outcome with a locally-developed examination (the assessment instrument), then a performance objective on this instrument for this outcome might be that 80% or more of the students will achieve a sub-score of at least 70% on the set of examination questions dealing with the international and global dimensions of business. Therefore, performance objectives

are even more specific than intended outcomes in as much as they identify concrete quantitative targets for the assessment methods used to measure the achievement of the outcomes. Furthermore, each intended outcome should be capable of being measured by more than one assessment method, and would therefore have multiple performance objectives associated with it.

Summing Up

...As we move downward along the Assessment Pyramid, we progress from the broad and general to the narrow and specific. Intended outcomes and performance objectives provide the necessary degree of specificity and measurability required in order to determine the extent of student learning, operational effectiveness, and mission accomplishment.

(Source: <http://iacbe.org/wp-content/uploads/2017/08/Outcomes-Assessment-Plan-Guidelines.pdf>)

The following pages provide an example of how the IACBE Assessment Pyramid is implemented by the University (using Capitol Technology University’s current M.B.A. and M.S. in Information Systems Management programs):

OUTCOMES ASSESSMENT PLAN
Capitol Technology University
Department of Business and Information Sciences

Section I: Mission and Broad-Based Goals

MISSION STATEMENT

Mission of the Department of Business and Information Sciences:

Mission Statement:

The mission of the School of Business and Information Sciences is to provide students a practical education in an environment supportive of academic excellence and high student achievement, preparing them to thrive in professional careers.

BROAD-BASED GOALS

Broad-Based Student Learning Goals:

1. **Employability:** Graduates will have an understanding of the difference between theory and practice and how to extract from theory and extend its application to real-world situations.

<p>2. Communications: Graduates will be able to effectively communicate their ideas in both written and oral form (technical and non-technical) understanding that communication is a cooperative process in both the one-on-one and team environment.</p>
<p>3. Preparation of the Mind: Graduates will have a broad intellectual grounding in business and/or technology. Graduates will be able to analyze situations and successfully determine cause and effect. Graduates will know how to use contemporary research tools as well as more traditional methods to locate and analyze information and develop knowledge.</p>
<p>4. Professionalism: Graduates will have an understanding of their professional and ethical responsibilities. Graduates will have an understanding of the possible social, economic, cultural and environmental impact of their business and/or technical solutions in a global and social context. Graduates will recognize that lifelong learning is essential to the ongoing process of professional and personal development.</p>

BROAD-BASED OPERATIONAL GOALS

<p>Broad-Based Operational Goals:</p>
<p>1. The School of Business and Information Sciences will be successful in retaining its students based on the University’s historical data. (see pg. 13)</p>
<p>2. The School of Business and Information Sciences will recruit, retain and develop qualified faculty committed to academic excellence.</p>
<p>3. The School of Business and Information Sciences will provide students a practical hands-on education.</p>
<p>4. The School of Business and Information Sciences will offer strong, comprehensive, and contemporary degree programs that successfully prepare students for academic and professional careers, graduate school and professional advancement.</p>
<p>5. The School of Business and Information Sciences will provide a supportive learning environment that fosters student success and contributes to excellence in business education.</p>

Section II: Student Learning Assessment

STUDENT LEARNING ASSESSMENT: MASTER’S-LEVEL PROGRAMS

<p>Student Learning Assessment for Master of Business Administration (MBA)</p>
<p>Program Intended Student Learning Outcomes (Program ISLOs)</p>

<p>1. Graduates will be able to identify organization problems and use information systems, technology, financial and accounting techniques, marketing research, and other decision-making tools to strategically analyze and solve business problems in a global environment.</p> <p>Broad-Based Student Learning Goals Associated with this Outcome: 1, 3</p> <p>Key Learning Outcomes for Master's-Level Business Programs to which this Outcome is Linked: 1, 2, 3</p>
<p>2. Graduates will be able to employ quantitative techniques and methods and interpret the results in the analysis of real-world business situations.</p> <p>Broad-Based Student Learning Goals Associated with this Outcome: 3</p> <p>Key Learning Outcomes for Master's-Level Business Programs to which this Outcome is Linked: 3</p>
<p>3. Graduates will be able to communicate effectively in multiple forms in a convincing and persuasive manner.</p> <p>Broad-Based Student Learning Goals Associated with this Outcome: 2</p> <p>Key Learning Outcomes for Master's-Level Business Programs to which this Outcome is Linked: 4</p>
<p>4. Graduates will be able to collaborate effectively with a team of colleagues on diverse projects.</p> <p>Broad-Based Student Learning Goals Associated with this Outcome: 2, 3</p> <p>Key Learning Outcomes for Master's-Level Business Programs to which this Outcome is Linked: 5</p>
<p>5. Graduates will be able to deduce the ethical obligations and responsibilities of business in a leadership role.</p> <p>Broad-Based Student Learning Goals Associated with this Outcome: 4</p> <p>Key Learning Outcomes for Master's-Level Business Programs to which this Outcome is Linked: 6</p>
<p>6. Graduates will be able to differentiate and synthesize discipline-based knowledge as well as hypothesize the interrelationships of the specific areas of study.</p> <p>Broad-Based Student Learning Goals Associated with this Outcome: 1, 2, 3</p> <p>Key Learning Outcomes for Master's-Level Business Programs to which this Outcome is Linked: 2</p>
<p>7. Graduates will develop leadership skills and demonstrate the ability to become a change agent in a complex global economy.</p> <p>Broad-Based Student Learning Goals Associated with this Outcome: 1, 3</p> <p>Key Learning Outcomes for Master's-Level Business Programs to which this Outcome is Linked: 1, 2, 3,4</p>

Assessment Instruments for Intended Student Learning Outcomes— Direct Measures of Student Learning:	Performance Objectives (Targets/Criteria) for Direct Measures:
1. Capstone Strategic Management (MBA 650) Case Study Program ISLOs Assessed by this Measure: 1, 2, 3, 4, 5, 6, 7	At least 75% of the students will score 75% or higher. Rubric: See Appendix A, C, D In addition to the rubric each case study has solution against which all students are graded. This is case specific.
2. Capstone Senior Project (MBA 700) Program ISLOs Assessed by this Measure: 1, 2, 4, 5, 6	At least 75% of graduating seniors will score 75% or higher. Rubric: See Appendix B,C, D
Assessment Instruments for Intended Student Learning Outcomes— Indirect Measures of Student Learning:	Performance Objectives (Targets/Criteria) for Indirect Measures:
1. Graduating Student Survey (Graduate) Program ISLOs Assessed by this Measure: 1, 2, 3, 4, 5, 6, 7	On the exit survey instrument, at least 75% of graduating seniors in management will indicate that they were “successful” or “very successful” in achieving the intended learning outcomes for the major in business. Instrument: See Appendix E
2. End-of-course survey (contains overall course and curriculum questions) Program ISLOs Assessed by this Measure: 1, 2, 3, 4, 5, 6, 7	At least 75% of the students agree or strongly agree that the overall quality of the course has met their expectations of quality and intended learning outcomes of the course. Instrument: See Appendix F

Section III: Operational Assessment

INTENDED OPERATIONAL OUTCOMES: SCHOOL OF BUSINESS AND INFORMATION SCIENCES

Intended Operational Outcomes for the School of Business and Information Sciences:
1. The School of Business and Information Sciences will be successful in placing its undergraduates in appropriate entry-level positions or in graduate school on an annual basis. Broad-Based Operational Goals Associated with this Outcome: 4

<p>2. Faculty members in the School of Business and Information Sciences will engage in appropriate professional development activities on an annual basis.</p> <p>Broad-Based Operational Goals Associated with this Outcome: 2</p>	
<p>3. The School of Business and Information Sciences will be successful in providing high-quality instruction to its students.</p> <p>Broad-Based Operational Goals Associated with this Outcome: 4</p>	
<p>4. The School of Business and Information Sciences will be successful in providing high-quality advising to its students.</p> <p>Broad-Based Operational Goals Associated with this Outcome: 5</p>	
<p>5. Students in the School of Business and Information Sciences will participate in relevant internships on an annual basis.</p> <p>Broad-Based Operational Goals Associated with this Outcome: 3, 4</p>	
<p>6. The School of Business and Information Sciences will provide a practical hands-on experience.</p> <p>Broad-Based Operational Goals Associated with this Outcome: 3</p>	
<p>7. The School of Business and Information Sciences will be successful in retaining its students on an annual basis.</p> <p>Broad-Based Operational Goals Associated with this Outcome: 1</p>	
<p>8. The School of Business and Information Sciences will be successful in contributing to the professional advancement of its MBA and MSISM graduates.</p> <p>Broad-Based Operational Goals Associated with this Outcome: 4</p>	
<p>Assessment Measures/Methods for Intended Operational Outcomes:</p>	<p>Performance Objectives (Targets/Criteria) for Operational Assessment Measures/Methods:</p>
<p>1. <i>Report of the Office of Career Services and Graduate Student Support</i></p> <p>Intended Operational Outcomes Assessed by this Measure: 1, 8</p>	<p><i>The School of Business and Information Sciences will place 75% or more of its undergraduate students in degree related positions or in graduate school within nine months of graduation.</i></p>
<p>2. <i>Graduating Student Survey</i></p> <p>Intended Operational Outcomes Assessed by this Measure: 3</p>	<p><i>At least 75 % of graduating students agreed or strongly agreed that the University provided high quality instruction.</i></p>

<p>3. <i>Performance Review</i></p> <p>Intended Operational Outcomes Assessed by this Measure: 2</p>	<p><i>At least 75% of full-time faculty will participate in professional development activities (webinars, publication, conferences, workshops) on an annual basis.</i></p> <p><i>At least 50% part-time faculty will participate in professional development activities (webinars, publication, conferences, workshops) on an annual basis.</i></p>
<p>4. <i>Continuation Rates Report</i></p> <p>Intended Operational Outcomes Assessed by this Measure: 7</p>	<p><i>At least 50% will graduate.</i></p>
<p>5. <i>Course Survey—to include only those questions related to student satisfaction with course instruction and academic advising</i></p> <p>Intended Operational Outcomes Assessed by this Measure: 3, 4, 6</p>	<p><i>At least 75% of students will agree or strongly agree that they were provided high quality instruction in the course.</i></p> <p><i>At least 75% of students will agree or strongly agree that they were provided high quality advising.</i></p> <p><i>At least 75% will agree or strongly agree that they were provided hands on experiences.</i></p>
<p>6. <i>Internship Report</i></p> <p>Intended Operational Outcomes Assessed by this Measure: 5</p>	<p><i>At least 40% of the students will participate in internships.</i></p>

b) document student achievement of learning outcomes in the program

The University will document student achievement of the learning outcomes in the program in the same fashion as its current programs. The University will also publicly post the results of the assessment on its website per IACBE accreditation requirements.

The following pages are an example of the University’s public disclosure of its assessment of the learning outcomes (for programs under IACBE):

Report of Student Learning and Achievement

Capitol Technology University Department of Business and Information Sciences

For Academic Year: 2015-2016

Mission of the Department of Business and Information Sciences
The mission of the Department of Business and Information Sciences is to provide students a practical education in an environment supportive of academic excellence and high student achievement, preparing them to thrive in professional careers.
Student Learning Assessment for the Master of Business Administration (MBA)
Program Intended Student Learning Outcomes (Program ISLOs)
1. Graduates will be able to identify organization problems and use information systems, technology, financial and accounting techniques, marketing research, and other decision-making tools to strategically analyze, assess, and devise solutions to business problems in a global environment.
2. Graduates will be able to employ quantitative techniques and methods and interpret the results in the analysis of real-world business situations.
3. Graduates will be able to communicate effectively in multiple and present arguments in a convincing and persuasive manner.
4. Graduates will be able to collaborate effectively with a team of colleagues on diverse projects.
5. Graduates will be able to deduce the ethical obligations and responsibilities of a business in a leadership role.
6. Graduates will be able to differentiate and synthesize discipline-based knowledge as well as hypothesize the interrelationships of the specific areas of study.
7. Graduates will develop leadership skills and demonstrate the ability to become a change agent in a complex global economy

<p>Assessment Instruments for Intended Student Learning Outcomes— Direct Measures of Student Learning:</p>	<p>Performance Objectives (Targets/Criteria) for Direct Measures:</p>
<p>1. Capstone Strategic Management (MBA 650) Case Study Program ISLOs Assessed by this Measure: 1, 2, 3, 4, 5, 6, 7</p>	<p>At least 80% of the students will score 80% or higher on the case study evaluation rubric.</p>
<p>2. Capstone Project (MBA 700) Program ISLOs Assessed by this Measure: 1, 2, 4, 5, 6</p>	<p>At least 80% of graduating MBA students will score 80% or higher on the Capstone Project evaluation rubric.</p>
<p>Assessment Instruments for Intended Student Learning Outcomes— Indirect Measures of Student Learning:</p>	<p>Performance Objectives (Targets/Criteria) for Indirect Measures:</p>
<p>1. Graduating Student Survey (Graduate) Program ISLOs Assessed by this Measure: 1, 2, 3, 4, 5, 6, 7</p>	<p>On the exit survey instrument, at least 75% of the MBA graduates will indicate that they were “successful” or “very successful” in achieving the intended learning outcomes for the major in business.</p>
<p>2. End-of-course survey (contains overall course and curriculum questions) Program ISLOs Assessed by this Measure: 1, 2, 3, 4, 5, 6, 7</p>	<p>At least 70% of the students agree or strongly agree that the overall quality of the course has met their expectations of quality and intended learning outcomes of the course.</p>
<p style="text-align: center;">Assessment Results: Master of Business Administration (MBA)</p>	
<p>Summary of Results from Implementing Direct Measures of Student Learning:</p>	
<p>1. <u>Capstone Strategic Management (MBA 650) Case Study:</u> Percentage of Students Achieving a Score of 80% or Higher on the Capstone Strategic Management Case Study: Capstone Strategic Management Case Study (Program ISLO 1, 2, 3, 4, 5, 6, 7): 100% of Total (Class average score: 90.8%)</p>	

<p>2. <u>Capstone Project (MBA 700):</u></p> <p>Percentage of Students Achieving a Score of 80% or Higher on the Capstone Project:</p> <p>Capstone Project (Program ISLO 1, 2, 3, 4, 5, 6, 7): 100% of Total (Class average score: 96.6%)</p>																		
<p>Summary of Results from Implementing Indirect Measures of Student Learning:</p> <p>1. <u>Graduating Student Survey (Graduate):</u></p> <p>Not Assessed: the response rate was not statistically significant.</p>																		
<p>2. <u>End-of-course Survey:</u> (contains overall course questions, curriculum questions, and percentage of students who “agree” and “strongly agree”)</p> <table border="0"> <tr> <td>1. The instructor was well prepared to present and discuss course material.</td> <td>96.4%</td> </tr> <tr> <td>2. The instructor presented content in a systematic and organized fashion, relating parts to the whole.</td> <td>97.5%</td> </tr> <tr> <td>3. The instructor used supplemental technology to present material (ex., audio visual aids, Canvas, www, etc.)</td> <td>95.7%</td> </tr> <tr> <td>4. The instructor posed questions to students designed to promote critical thinking and analysis.</td> <td>90.4%</td> </tr> <tr> <td>5. The instructor promoted free-flow of communication: instructor and student, and between students.</td> <td>97.5%</td> </tr> <tr> <td>6. The instructor introduced divergent viewpoints in areas where different points of view exist.</td> <td>92.5%</td> </tr> <tr> <td>7. The instructor clarified abstract and complex ideas, using examples within students</td> <td>91.5%</td> </tr> <tr> <td>8. The instructor periodically evaluated students.</td> <td>90.3%</td> </tr> <tr> <td>9. The instructor assigned homework which reinforces the lecture materials.</td> <td>95%</td> </tr> </table>	1. The instructor was well prepared to present and discuss course material.	96.4%	2. The instructor presented content in a systematic and organized fashion, relating parts to the whole.	97.5%	3. The instructor used supplemental technology to present material (ex., audio visual aids, Canvas, www, etc.)	95.7%	4. The instructor posed questions to students designed to promote critical thinking and analysis.	90.4%	5. The instructor promoted free-flow of communication: instructor and student, and between students.	97.5%	6. The instructor introduced divergent viewpoints in areas where different points of view exist.	92.5%	7. The instructor clarified abstract and complex ideas, using examples within students	91.5%	8. The instructor periodically evaluated students.	90.3%	9. The instructor assigned homework which reinforces the lecture materials.	95%
1. The instructor was well prepared to present and discuss course material.	96.4%																	
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9. The instructor assigned homework which reinforces the lecture materials.	95%																	

10.	The instructor provided useful feedback on submitted materials.	91.4%
11.	The instructor was available outside of scheduled class hours.	92.8%
12.	Course objectives were clearly defined.	97.6%
13.	Dates for the submission of major materials were specified.	98.8%
14.	Guidelines and requirements for presentations and written assignments were clearly stated.	97.5%
15.	Clear, well-developed policies and procedures for evaluating student performance and grading were explained.	96.3%
16.	Expectations of students including, but not limited to attendance, make-up work, and honor code policies were clearly explained.	97.6%
17.	The course objectives were accomplished.	94.2%
18.	Exams and quizzes were designed to test the course outcomes (covered appropriate subject matter).	95.3%
19.	The required text(s) were valuable in contributing to my overall understanding of the course content.	89.6%
20.	The labs demonstrated and reinforced the course objectives.	92.5%

Summary of Achievement of Intended Student Learning Outcomes:

Intended Student Learning Outcomes	Learning Assessment Measures							
	Direct Measure 1 Performance Target Was...	Direct Measure 2 Performance Target Was...	Direct Measure 3 Performance Target Was...	Direct Measure 4 Performance Target Was...	Indirect Measure 1 Performance Target Was...	Indirect Measure 2 Performance Target Was...	Indirect Measure 3 Performance Target Was...	Indirect Measure 4 Performance Target Was...
1. Graduates will be able to identify organization problems and use information systems, technology, financial and accounting techniques, marketing research, and other decision-making tools to strategically analyze, assess, and devise solutions to business problems in a global	Met	Met			NA	Met		

environment.							
2. Graduates will be able to employ quantitative techniques and methods and interpret the results in the analysis of real-world business situations.	Met	Met	NA	Met	NA	Met	
3. Graduates will be able to communicate effectively in multiple and present arguments in a convincing and persuasive manner.	Met	Met	NA	Met	NA	Met	
4. Graduates will be able to collaborate effectively with a team of colleagues on diverse projects.	Met	Met	NA	Met	NA	Met	
5. Graduates will be able to deduce the ethical obligations and responsibilities of a business in a leadership role.	Met	Met	NA	Met	NA	Met	
6. Graduates will be able to differentiate and synthesize discipline-based knowledge as well as hypothesize the interrelationships of the specific areas of study.	Met	Met	NA	Met	NA	Met	

7. Graduates will develop leadership skills and demonstrate the ability to become a change agent in a complex global economy	Met	Met	Met	NA	Met		
Proposed Courses of Action for Improvement in Learning Outcomes for which Performance Targets Were Not Met:							
1. Indirect Measure 1: The university will implement an improved administrative procedure prior to 2018 Commencement that requires master's degree graduates to answer the Graduating Student Survey.							

Student Learning Assessment for the Master of Science in Information Systems Management (MSISM)	
Program Intended Student Learning Outcomes (Program ISLOs)	
1. Graduates will be able to identify organization problems and use information systems, technology, project management, and other decision-making tools to strategically analyze, assess, and devise solutions to business problems in a global environment.	
2. Graduates will develop leadership skills and demonstrate the ability to become a change agent in a complex global economy.	
3. Graduates will be able to communicate effectively in multiple forms and demonstrate the ability to devise plans of action for real-world business challenges.	
4. Graduates will be able to the ethical obligations and responsibilities of a business in a leadership role.	
5. Graduates will be able to employ information systems, technology, and other decision-making tools and interpret the results in analyzing and providing solutions to business problems in a global business environment.	
6. Graduates will be able to define and conceptualize opportunities for enhanced information analysis and exploitation in order to facilitate business planning and execution.	
7. Graduates will be able to collaborate effectively with a team of colleagues on diverse projects.	
Assessment Instruments for Intended Student Learning Outcomes—	Performance Objectives (Targets/Criteria) for Direct Measures:

<p>Direct Measures of Student Learning:</p>	<p>1. Capstone Project (SM 569) Project</p> <p>Program ISLOs Assessed by this Measure: 1, 2, 3, 4, 5, 6, 7</p>	<p>At least 80% of the students will score 80% or higher on the Capstone Project evaluation rubric.</p>
<p>Assessment Instruments for Intended Student Learning Outcomes— Indirect Measures of Student Learning:</p>	<p>1. Graduating Student Survey (Graduate)</p> <p>Program ISLOs Assessed by this Measure: 1, 2, 3, 4, 5, 6, 7</p> <p>2. End-of-course survey (contains overall course and curriculum questions)</p> <p>Program ISLOs Assessed by this Measure: 1, 2, 3, 4, 5, 6, 7</p>	<p>Performance Objectives (Targets/Criteria) for Indirect Measures:</p> <p>On the exit survey instrument, at least 75% of the MSISM graduates will indicate that they were “successful” or “very successful” in achieving the intended learning outcomes for the major in business.</p> <p>At least 70% of the students “agree” or “strongly agree” that the overall quality of the course has met their expectations of quality and intended learning outcomes of the course.</p>
<p>Assessment Results: Master of Science in Information Systems Management (MSISM)</p>		
<p>Summary of Results from Implementing Direct Measures of Student Learning:</p>		
<p>1. Capstone Project (SM 569) Project:</p> <p>Percentage of Students Achieving a Score of 80% or Higher on the Capstone Project:</p> <p>Capstone Project (Program ISLO 1, 2, 3, 4, 5, 6, 7): 100% of Total (Class average score: 96.5%)</p>		
<p>Summary of Results from Implementing Indirect Measures of Student Learning:</p>		
<p>1. Graduating Student Survey (Graduate):</p>		

Not Assessed: the response rate was not statistically significant.

2. End-of-course Survey: (contains overall course questions, curriculum questions, and percentage of students who “agree” and “strongly agree”)		
1. The instructor was well prepared to present and discuss course material.		94.2%
2. The instructor presented content in a systematic and organized fashion, relating parts to the whole.		93.3%
3. The instructor used supplemental technology to present material (ex., audio visual aids, Canvas, www, etc.)		94.2%
4. The instructor posed questions to students designed to promote critical thinking and analysis.		90%
5. The instructor promoted free-flow of communication: instructor and student, and between students.		90%
6. The instructor introduced divergent viewpoints in areas where different points of view exist.		87.5%
7. The instructor clarified abstract and complex ideas, using examples within students		91.7%
8. The instructor periodically evaluated students.		90.8%
9. The instructor assigned homework which reinforces the lecture materials.		94.2%
10. The instructor provided useful feedback on submitted materials.		81.7%
11. The instructor was available outside of scheduled class hours.		88.3%
12. Course objectives were clearly defined.		96.7%
13. Dates for the submission of major materials were specified.		88.3%
14. Guidelines and requirements for presentations and written assignments were clearly stated.		96.7%
15. Clear, well-developed policies and procedures for evaluating student performance and grading were explained.		90%
16. Expectations of students including, but not limited to attendance, make-up work, and honor code policies were clearly explained.		96.7%
17. The course objectives were accomplished.		100%
18. Exams and quizzes were designed to test the course outcomes (covered appropriate subject matter).		96.7%

19.	The required text(s) were valuable in contributing to my overall understanding of the course content.	97.5%
20.	The labs demonstrated and reinforced the course objectives.	93.3%

Summary of Achievement of Intended Student Learning Outcomes:

Intended Student Learning Outcomes	Learning Assessment Measures							
	Direct Measure 1	Direct Measure 2	Direct Measure 3	Direct Measure 4	Indirect Measure 1	Indirect Measure 2	Indirect Measure 3	Indirect Measure 4
Program ISLOs	Performance Target Was...	Performance Target Was...	Performance Target Was...	Performance Target Was...	Performance Target Was...	Performance Target Was...	Performance Target Was...	Performance Target Was...
1. Graduates will be able to identify organization problems and use information systems, technology, project management, and other decision-making tools to strategically analyze, assess, and devise solutions to business problems in a global environment.	Met				NA	Met		
2. Graduates will develop leadership skills and demonstrate the ability to become a change agent in a complex global economy.	Met				NA	Met		
3. Graduates will be able to communicate effectively in multiple forms and demonstrate the ability to	Met				NA	Met		

devise plans of action for real-world business challenges.				
4. Graduates will be able to the ethical obligations and responsibilities of a business in a leadership role.	Met	NA	Met	
5. Graduates will be able to employ information systems, technology, and other decision-making tools and interpret the results in analyzing and providing solutions to business problems in a global business environment.	Met	NA	Met	
6. Graduates will be able to define and conceptualize opportunities for enhanced information analysis and exploitation in order to facilitate business planning and execution.	Met	NA	Met	
7. Graduates will be able to collaborate effectively with a team of colleagues on diverse projects.	Met	NA	Met	

Proposed Courses of Action for Improvement in Learning Outcomes for which Performance Targets Were Not Met:

1. Indirect Measure 1: The university will implement an improved administrative procedure prior to 2018 Commencement that requires Master's degree graduates to answer the Graduating Student Survey.

4. Provide a list of courses with title, semester credit hours and course descriptions, along with a description of program requirements.

Program description, as it will appear in the catalog:

The Master of Science (M.S.) in Aviation program is designed to meet the growing needs of today's business and government environments where Aviation is now a major business consideration. The M.S. in Aviation provides advanced graduate-level management education where the latest Aviation concepts are reviewed and analyzed with a laser focus. Throughout the program, the latest technological developments, applications, and considerations in the aviation industry are explored and applied to real-life industry challenges. Students will learn optimum methods and techniques to define resources and associated risks at an executive level in order to maintain profitability, manage work effectivity and efficiently, and ensure customer satisfaction.

The M.S. in Aviation will prepare students for advanced management and leadership positions throughout the aviation industry and related businesses.

Description of program requirements:

Entrance requirements: To be fully accepted into the program, students must have completed an undergraduate degree with a cumulative GPA of no less than 3.0 on a 4.0 scale. In addition, students must also meet the program-specific prerequisites for their intended program.

Additional prerequisites for the M.S. in Aviation are:

Applicants who do not have an undergraduate degree in Aviation or related degree may be required to take additional courses at the undergraduate level to address deficiencies in aviation concepts such as airspace, airports, airlines, basic principles of flight, and Federal Aviation Regulations (FARs) prior to enrolling in Aviation core courses; however, waivers may be granted in some cases with Department Chair or Academic Dean approval.

Students who have not met the 3.0 undergraduate cumulative GPA requirements, or do not meet all the program specific prerequisites, are provided an opportunity to gain full acceptance. Depending on the degree program, additional information may be requested. In this case, students are provisionally admitted and limited to three courses of enrollment. To achieve full acceptance, provisional students must maintain a 3.0 cumulative GPA in their first three graduate courses. Upon doing so, students are automatically converted to full acceptance status. If a provisional student fails to achieve a minimum 3.0 cumulative GPA after completing three courses, then he or she will be academically dismissed, and will not be permitted to enroll in any further courses.

Degree Requirements:

The following is a list of courses for the M.S. in Aviation degree. Students expecting to complete this degree must meet all prerequisites for the courses listed below.

**Master of Science in Aviation
Courses**

AVIATION OPERATIONS, MANAGEMENT, AND RESEARCH COURSES
36 CREDITS

The M.S. in Aviation provides a strong operational, managerial, and research background at the executive level for the aviation industry. Students learn to define the resources and risks to maintain profitability, manage work effectively and efficiently, and ensure customer satisfaction in an aviation setting. The program focuses on strengthening the student's leadership skills, enhancing the student's understanding of new technologies, expanding the student's ability to use technology to solve problems, and understanding the process of innovation. M.S. in Aviation students must take all the following courses.

AVT-616 Aviation Financial and Contract Management (3 Credits)

The course is an introduction to financial and contract management for aviation managers. The course will cover topics in financial management accounting, direct and indirect costs, revenues, profits, financial position, financial reports, return on investment, net present value, internal rate of return, and cash and funds flow statements in the aviation industry. The course will cover the principles of contract formation, contract financing, subcontracts, and negotiation techniques. Students will present aviation case studies during the course.

AVT-625 Organizational Behavior in the Aviation Environment (3 Credits)

Technology has created amazing new opportunities for aviation. Although the explosive technology growth has increased productivity and advancement, it has also created changes in worker requirements, employee expectations and workplace changes. This course analyzes organizational behavior in an aviation environment. Cases are analyzed to develop skills in applying theories to common aviation managerial problems in technology driven organizations.

AVT-627 Impact of Emerging Technology on Aviation (3 Credits)

The course will focus on emerging technologies that influence aviation leadership and management. Students will learn leading edge skills to understand the technologies and innovations that are increasingly changing the aviation landscape. The course will put students at the forefront of new technology to produce value for their future business, employers, and customers.

AVT-631 Aviation Personnel Management (3 Credits)

The course delves into the challenges of personnel management in aviation organizations. Topics include the environmental requirements for effective and innovative efforts, direction and motivation, leadership behavior, recruitment of technical staff, orientation and training programs, personnel placement and reassignment, assignment of work, salary administration, personnel evaluation and counseling, professional growth and promotion, technical obsolescence and retraining, equal opportunity programs, employee grievances, and handling of conflict situations. Students explore typical personnel management situations that arise in an aviation organization.

AVT-635 Technology-Enabled Aviation Operations (3 Credits)

The course will prepare the student to contribute effectively in today's technology-enabled aviation workplace by understanding how to leverage processes, systems, and data to create

business value. The course will examine aviation operations in established companies and start-up firms. Students will explore the perspectives and needs of both established and start-up organizations.

AVT-646 Aviation Project Management (3 Credits)

The course provides an overview of the theory and practice of managing an aviation project in an organizational setting. Students will gain a solid understanding and foundation of managing each phase of the project life cycle, adhering to organizational and cost constraints, setting goals for stakeholders, and utilizing best practices to complete the project on time and within budget. Project management is examined in the aviation sector.

AVT-650 Strategic Aviation Management (3 Credits)

The course examines the objectives, elements and framework of analysis for strategic aviation management. Case studies and aviation virtual simulations will be used as the primary tool of learning and analysis. Students will focus on executive level collaboration, synthesizing information, sound business judgment, aviation expertise and proper communication.

AVT-671 Airport Management (3 Credits)

The course provides an in-depth focus on the management of domestic and international airports. Airports possess unique challenges and operational activities that are governed by national and international law. How all these separate entities interact, co-operate and work efficiently is important to understand, manage and develop. The constraints and external influences are dynamic and changing constantly. The course will focus on these aspects, their importance and difficulties. Additionally, the long-term investments and economics of managing airports will be examined for current aviation facilities and new airports.

AVT-674 Airline Management (3 Credits)

Commercial airline management is one of the most unique business sectors in the world. Airlines can be large multi-national corporations financed by a government for national prestige or low-cost carriers that operate to maximize all profits by efficient operations. In this course, the different operational models are covered and reviewed against national and international standards. The related topics of recruiting, maintaining staff certifications, and dynamic operations will be addressed at all levels.

AVT-686 Aviation Cybersecurity Management (3 Credits)

Aviation cybersecurity management is becoming one of the most important aspects of aviation. Aircraft systems integrity, airport security, security of the passengers and cargo are a few examples of where the reliance on computer networks is significant and the consequences of a breach are great. Students will cover the needs and developments of cybersecurity techniques to minimize or eliminate threats. The course covers aviation cybersecurity management within the context of rapid technological changes.

AVT-700 Aviation Research Project I (3 Credits)

Students will begin a graduate level research project in the field of Aviation. The research and thesis development are supervised by a faculty member. The student will research and write the thesis in this course and prepare to defend the thesis in a viva voce (i.e., oral) examination. This course is the second to last course in the program as the student applies accumulated knowledge of program's classes to this effort.

AVT-701 Aviation Research Project II (3 Credits)

During this course, students will complete the graduate level research project in the field of Aviation that was approved and developed in AVT-700. The research and thesis development are supervised by a faculty member. The thesis must be defended by the student in a viva voce (i.e., oral) examination during the course. This course is the last course in the program. Prerequisite: AVT-700.

5. Discuss how general education requirements will be met, if applicable.

N/A. This is a graduate program.

6. Identify any specialized accreditation or graduate certification requirements for this program and its students.

The program will be accredited regionally by Middle States Commission on Higher Education (MSCHE). The program will also receive specialized accreditation by International Accreditation Council for Business Education (IACBE) for its management content. Capitol Technology University is currently accredited by, and in good standing with, both organizations.

7. If contracting with another institution or non-collegiate organization, provide a copy of the written contract.

The University will not be contracting with another institution or non-collegiate organization.

8. Provide assurance and any appropriate evidence that the proposed program will provide students with clear, complete, and timely information on the curriculum, course and degree requirements, nature of faculty/student interaction, assumptions about technology competence and skills, technical equipment requirements, learning management system, availability of academic support services and financial aid resources, and costs and payment policies.

The M.S. in Aviation program will provide students with clear, complete, and timely information on the curriculum, course and degree requirements, nature of faculty/student interaction, assumptions about technology competence and skills, technical equipment requirements, learning management system, availability of academic support services and financial aid resources, and costs and payment policies.

Curriculum, course and degree information will be available on the University website and via e-mail as well as regular mail (by request). The expectations on faculty/student interaction are available to students during virtual open house events, literature, website, etc. In addition, this information is part of the material distributed for each course. Students receive guidance on proper behavior/interaction in the on-ground classroom and online environment to facilitate a high-level learning experience. Technology competence and skills and technical equipment requirements are part of the material distributed for each course. The technical equipment requirements are also listed on our website and provided to students in the welcome package.

The University's academic support services, financial aid resources, costs and payment policies, and learning management system are covered in the university open houses, application process, welcome aboard process, orientation, student town halls, and individual counseling.

9. **Provide assurance and any appropriate evidence that advertising, recruiting, and admissions materials will clearly and accurately represent the proposed program and the services available.**

The M.S. in Aviation program’s advertising, recruiting, and admissions materials will clearly and accurately represent the proposed program and the services available. The material for every new program is derived from the new program request sent to the Maryland Higher Education Commission.

H. Adequacy of articulation:

1. **If applicable, discuss how the program supports articulation with programs at partner institutions.**

This program does not currently have articulation partners. However, the articulation process will work as it does for the University’s current degrees. The University is very active with its transfer partners throughout the state and beyond. The goal of the University is to work with partners to make transfer as seamless as possible and to maximize the student’s transfer credits as allowable. There are transfer admissions personnel to guide the student through the process.

I. Adequacy of faculty resources (as outlined in COMAR 13B.02.03.11):

1. **Provide a brief narrative demonstrating the quality of the program faculty. Include a summary list of faculty members with appointment type, terminal degree title and field, academic title/rank, status (full-time, part-time, adjunct) and the course(s) each faculty member will teach.**

All faculty listed below have been engaged with the University for at least several years. Dr. Antunes, Dr. Bajracharya, Dr. Bajwa, Dr. Baker, Dr. Butler, Dr. McAndrew, and Dr. Pitman are fulltime faculty members. Seven of the thirteen faculty members hold terminal degrees. Prof. Morgan and Prof. Weideman are professionally qualified given their significant years of experience and positions held in Aviation. Their resumes and curriculum vitae have reviewed and each one is deemed professionally qualified to teach their courses at this level. The University leadership is confident in the quality of the faculty and their abilities to provide a learning environment supportive of the University goals for student success. Additional doctorally-qualified faculty will be added as needed.

Instructors who will be engaged with the M.S. in Aviation are:

INSTRUCTOR	BACKGROUND	COURSES ALIGNED TO BE TAUGHT
Dr. Alex “Sandy” Antunes Full time	Ph.D. Computational Sciences and Informatics M.S. Astronomy B.S. Astronomy	AVT-627, AVT-635, AVT-700, and AVT-701
Dr. Chandra Bajracharya Full time	Ph.D. Electrical and Computer Engineering M.S. Applied Computing M.S. Electrical Power Engineering B.E. Electrical Engineering	AVT-627, AVT-635, AVT-700, and AVT-701

Dr. Garima Bajwa Full time	Ph.D. Computer Science and Engineering M.S. Electrical and Computer Engineering B.S. Electronics and Communication Engineering	AVT-627, AVT-635, AVT-700, and AVT-701
Dr. Richard Baker Full time	Ph.D. Information Systems M.S. Computer Science B.S. Mathematics F-4 Pilot	All AVT courses
Dr. Hasna Banu Adjunct	Ph.D. Theoretical Physics M.S. Mathematics B.S. Mathematics	AVT-627, AVT-635, AVT-700, and AVT-701
Dr. Kristen Broz Adjunct	J.D. B.A. History and English	AVT-616, AVT-700, and AVT-701
Dr. William Butler Full-time	D.Sc. Cyber Security M.S. Strategic Studies B.S. Computer Science NSTISSI No. 4011 CNSSI No. 4012 NSTISSI No. 4015 CNSSI No. 4016	AVT-686, AVT-700, and AVT-701
Dr. Jami Carroll Adjunct	D.Sc. Cyber Security M.S. Cyber Security M.B.A.	AVT-686, AVT-700, and AVT-701
Dr. Ian McAndrew Full time	Ph.D. Mechanical Engineering M.Sc. Manufacturing Engineering M.A. Education Management Post-Graduate Diploma in Education B.Sc. (Hons) Mechanical Engineering B.A. Production Engineering Technical Qualifications (Associate Degrees) Higher National Certificate, HNC, in Mechanical Engineering Higher National Diploma, HND, in Production Engineering System Safety in Occupational Hygiene and Safety – HAS Courses City and Guilds 200, 205 II & III (all distinctions – highest grade ever achieved in Ford’s Training Scheme) Apprentice Toolmaker 1977 – 1981 (Distinction)	All AVT courses

Prof. Sam Morgan III Adjunct	M.S. Aerospace, Aeronautical, & Astronautical Engineering B.G.S. General Studies MQ-1 Predator Pilot MQ-9 Reaper Instructor Pilot A-10 Instructor/Evaluator Pilot F-16 Maintenance Officer Military Pilot (T-37, T-38)	All AVT courses
Dr. Alexander Perry Adjunct	D.Sc. Cyber Security M.S. Computational Mathematics	AVT-686, AVT-700, and AVT-701
Dr. Jason Pittman Full time	Ph.D. Information Assurance M.S. Network Security B.S. English Literature and Micro-Biology	AVT-686, AVT-700, and AVT-701
Prof. Nathan Weideman Adjunct	M.S. Astronautical Engineering B.S. Professional Aeronautics	All AVT courses

Additional doctorally-qualified faculty will be added in the near future.

ADDITIONAL JUSTIFICATION:

Capitol Technology University's Aviation Instructors are leading experts in the aviation fields:

1. Dr. Richard (Dick) Baker has served as the Chair and a member of Indiana State University's Department of Aviation Technology. The Director of Indiana State University's Center for Unmanned Systems and Human Capital Development, Baker holds a bachelor's degree in Mathematics and master's degree in Computer Science from Indiana State University. He received his doctorate in Information Systems from Nova Southeastern University. Baker has been instrumental in the successful launch of ISU's Center for Unmanned Systems and directs the research and collaboration efforts with strategic partners. Baker brings many years of executive level experience in Information Technology (IT) from companies such as General Motors and Electronic Data Systems (EDS). Prior to entering the academic world, he also had extensive experience in the Aviation industry. Baker served as the Director of Human Factors and Safety for American Airlines where his responsibilities included CRM and safety training for all pilots and flight attendants. He received professional certification in Risk Management from the Transportation Safety Institute. Baker retired as a Colonel from the Indiana National Guard in 2003 where he held command positions including Indiana State Director of Operations, Indiana State Director of Support, 181st Fight Wing Support Group Commander, 181st Mission Support Squadron Commander, and 181st Chief of Supply. During his tenure with the Air Guard, he was a Weapons Systems Officer in the F-4 and worked extensively with airspace issues, rapid response teams for counter-terrorism, the Counterdrug Operations at United States Joint Forces Command, and was a trainer for the Air National Guard's Domestic Preparedness Operations.
2. Prof. Sam Morgan III has served as the Director of Unmanned Systems and an Aviation Instructor at Indiana State University. Mr. Morgan has over 26 years of experience in aviation and unmanned systems. During his 24 years as a pilot in the United States Air Force, Mr. Morgan

served as an A-10 Instructor/Evaluator Pilot, MQ-9 Reaper Instructor Pilot, MQ-1 Predator Pilot, F-16 Maintenance Officer, T-37/T-38 Pilot, Fight Safety Officer, Functional Check Flight Pilot, A-10 IP Flight Commander, Command Post Chief, Emergency Actions Controller, Airborne Jump-certified Battalion Air Liaison Officer, and Air Force ROTC Detachment Commander. He retired from active duty as a Colonel in the U.S. Air Force. Following his retirement from active duty, Mr. Morgan continued his work in aviation and unmanned systems as an instructor at Indiana State University.

3. Prof. Weideman is professionally qualified given his significant years of experience and positions held in the aviation industry. He has served as a Aerospace Maintenance Duty Officer for the U.S. Navy for over the past 5 years. He also works with the Defense Threat Reduction Agency (DTRA) and U.S. Special Operations Command (USSOCOM) on aerospace issues for Counter Weapons of Mass Destruction (CWMD) efforts. His previous positions include directing Navy Reserve Aircraft Maintenance Modification and Overhaul for a C-130 squadron, Senior Technical Writer for Aviation, and Naval Analyst for Naval Aviation matters.
2. **Demonstrate how the institution will provide ongoing pedagogy training for faculty in evidenced-based best practices, including training in:**

a) Pedagogy that Meets the Needs of the Students

The primary pedagogy for faculty at Capitol Technology University is the Active Learning model. The University believes strongly in a highly-interactive, thinking, and hands-on experience for students in each class to the maximum extent possible.

It was two Missouri State professors, historian Charles Bonwell and psychologist James Eison, who coined the term “active learning.” In their 1991 book on the subject, *Active Learning: Creating Excitement in the Classroom*, they offered this definition of the concept: “active learning involves students in doing things and thinking about the things they are doing.”

The definition, though it seems circuitous, marks a definitive pedagogical shift in college teaching and learning. Rather than think about what they are watching, hearing, or reading, students are first encouraged to be “doing” something in class, and then to apply critical thought and reflection to their own classroom work and activity. Their argument was backed up by research. Even Bligh, 20 years earlier, had pointed out that the immediate rehearsal of new information and knowledge had a significant impact upon learning.

This approach is as helpful in the sciences as it is in the arts or humanities: whether it’s organic chemistry, creative writing, or behavioral economics, concepts are all best understood through repeated practice and open, social exploration. The central tenet of active learning is that practice matters, and that classroom time is better spent giving students opportunities to work with concepts over and over, in a variety of ways and with opportunities.

The central tenet of active learning — that practice and interaction matters— can be applied across disciplines for immediate feedback, so that knowledge can take hold in their own minds.

(Source: Preville, P. Active Learning: The Perfect Pedagogy for the Digital Classroom: An Essential Guide for the Modern Professor)

All faculty receive regular periodic and recurring pedagogical training during the academic year. Those training sessions occur in a hybrid format – simultaneously live online and live on-ground in the classroom. The sessions are designed to reach all faculty, fulltime and adjunct, in order to ensure everyone receives the training. Additionally, the sessions are recorded for those faculty who are unable to attend the live training session due to other professional and teaching commitments.

b) The Learning Management System

The Department of Online Learning (formerly the University's Department of Distance Learning) and the instructional technology division support the online program needs of faculty and students. Those University organizations and the IT Help Desk provide constant and on-going support to the faculty. The Canvas portion of the program is the online Learning Management System. When a new faculty member is assigned to teach an online course, the Department of Online Learning provides formal training for the instructor. New faculty are assigned an experienced faculty mentor to ensure a smooth transition to the online environment as well as to ensure compliance with the institution's online teaching pedagogy. The University believes this provides the highest-level learning experience for the faculty member and, in turn, students attending online classes.

c) Evidenced-based Best Practices for Distance Education, if Distance Education is Offered.

Faculty at Capitol Technology University receive training in Keller's ARCS Motivational Model and his associated strategies for distance education/online learning.

A model used in online delivery of teaching and learning to increase learner motivation is the Keller's ARCS motivational model. This model has been considered an important element in online education because of its implications on increased learner motivation and learning outcomes. The Keller's model consists of motivating students by maintaining and eliciting attention (A), such as virtual clinical simulations; making the content and format relevant (R), by modeling enthusiasm or relating content to future use; facilitating student confidence (C), by providing "just the right challenge"; and promoting learner satisfaction (S), by providing reinforcement and praise when appropriate. Examples of the Keller's model include increasing motivation including the arousal of curiosity of students, making the connection between learning objectives and future learning goals, autonomous thinking and learning, and fostering student satisfaction. Keller's ARCS model has been researched by various educational online programs to analyze student motivation and learning outcomes. The Keller's model serves as an example and guide for instructors to motivate and increase online engagement with their students as well as research purposes.

A qualitative study by Chan Lin investigated online student learning and motivation. Discussion boards, student projects, and reflection data were collected and analyzed from a 12-week web-based course. Respondents indicated the importance of online feedback from the instructor and peer modeling of course tasks to visualize learning progress. The

study revealed using Keller's ARCS strategies fosters greater student online engagement by fostering self-efficacy and a sense of accomplishment.

In a mixed method study, assessing the use of Keller's ARCS on instructional design, the use of educational scaffolding fostered positive levels of student motivation. Relevancy, attention, confidence, and satisfaction were all common factors associated with student success in the course and course completion.

(Source: Pinchevsky-Font T, Dunbar S. Best Practices for Online Teaching and Learning in Health Care Related Programs. The Internet Journal of Allied Health Sciences and Practice. January 2015. Volume 13 Number 1.)

All faculty receive regular periodic and recurring training on evidence-based practices for distance education/online learning during the academic year. Those training sessions occur in multiple formats: asynchronous, synchronous (live online), hybrid (simultaneously live online and live on-ground), and on-ground in the classroom. The sessions are designed to reach all faculty, both full time and adjunct, to ensure all members receive the training. Additionally, the live sessions are recorded for those faculty who are unable to attend the live training session due to other professional commitments or who are teaching classes at the training delivery time.

J. Adequacy of Library Resources (as outlined in COMAR 13B.02.03.12):

- 1. Describe the library resources available and/or the measures to be taken to ensure resources are adequate to support the proposed program. If the program is to be implemented within existing institutional resources, include a supportive statement by the President for library resources to meet the program's needs.**

Library Services: The Puente Library offers extensive services and a wide collection for Capitol Technology University students to be academically successful. Library resources are available digitally. The library also provides a mailing service for materials borrowed through the Maryland system. The library is currently supporting the following degrees at the graduate level: M.S. in Computer Science, M.S. in Cyber Analytics, M.S. in Cyber and Information Security, M.S. in Electrical Engineering, M.S. in Information Systems Management, M.S. in Internet Engineering, M.S. in Unmanned and Autonomous Systems Policy and Risk Management, M.B.A., T.M.B.A. Business Analytics and Data Science, T.M.B.A. in Cybersecurity, D.Sc. in Cybersecurity, Ph.D. in Business Analytics and Decision Sciences, Ph.D. in Technology, Ph.D. in Technology/M.S. in Research Methods Combination Program, and Ph.D. in Unmanned Systems Applications. Therefore, the library is fully prepared to support a M.S. in Aviation.

Services provided to on line students include:

- "Ask the Librarian"
- Research Guides
- Tutorials
- Videos
- Online borrowing

Capitol Technology University's online library and the on-campus library provide faculty and students with reference documents as well as texts appropriate to their learning experiences.

Information about those services may be found at: <https://www.captechu.edu/current-students/puente-library>

The John G. and Beverley A. Puente Library provides access to management, decision science, and research methods materials through its 10,000-title book collection, e-books, and its 90 journal subscriptions. The library will continue to purchase new and additional materials in the management, decision science, and research methods area to maintain a strong and current collection in this subject area. Students can also access materials through the library's participation in Maryland's Digital eLibrary Consortium. This online electronic service provides access to numerous databases (Access Science, NetLibrary) that supply students with the materials they need. Available databases include ProQuest, EBSCO, ACM, Lexis Nexis, Taylor Francis, and Sage Publications.

The Puente Library can provide access to historical management and decision science materials through its membership in the Maryland Independent College and University Association (MICUA) and the American Society of Engineering Education (ASEE). Reciprocal loan agreements with fellow members of these organizations provide the library access to numerous research facilities that house and maintain archives of management and decision science documents. The proximity of the University of Maryland, College Park and other local area research and academic libraries provide the Puente Library with quick access to these materials as well.

The library currently supports the needs students at the undergraduate, masters and doctoral levels.

K. Adequacy of Physical Facilities, Infrastructure and Instructional Equipment (as outlined in COMAR 13B.02.03.13):

- 1. Provide an assurance that the physical facilities, infrastructure and instruction equipment are adequate to initiate the program, particularly as related to spaces for classrooms, staff and faculty offices, and laboratories for studies in the technologies and sciences. If the program is to be implemented within existing institutional resources, include a supportive statement by the President regarding adequate equipment and facilities to meet the program's needs.**

No new facilities are required for the program. The online class platform is web based and requires no additional equipment for the institution. The current Learning Management System, Canvas and Adobe Connect, meets the needs of the degree program. The Business and Technology lab, Computer Science Lab, Cyber Lab, Robotics Lab, and Unmanned Systems Lab meet the potential research needs of the students. The labs provide both local and virtual support.

- 2. Provide assurance and any appropriate evidence that the institution will ensure students enrolled in and faculty teaching in distance education will have adequate access to:**

a) An institutional electronic mailing system

Capitol Technology University provides an institutional electronic mailing system to all students and faculty. The capability is provided to all students and faculty in all the institution's modalities of course delivery. Capitol Technology University students and faculty are required to use the

institution's email addresses (e.g., xxxxxxxx@captechu.edu) in all University matters and communications. The University uses the email capabilities in Microsoft Office 365 and Microsoft Outlook.

b) A learning management system that provides the necessary technological support for distance education

Capitol Technology University provides a robust Learning Management Systems (LMS) through the use of the Canvas LMS by Instructure (www.canvaslms.com). The university pairs Canvas with Adobe Connect (www.adobe.com/products/adobeconnect.html) to provide a platform for every student and faculty member to meet face-to-face in a synchronous "live" mode of communication. The use of Canvas is required for every course offered at the University; as a result, every course has a classroom on Canvas and Adobe Connect. All syllabi, grades, and assignments must be entered in to Canvas on a timely basis throughout the semester.

Canvas provides the world's most robust LMS. It is a 21st Century LMS; Canvas is a native cloud, Amazon Web Service hosted system. The system is adaptable, reliable, and customizable. Canvas is easy to use for students and faculty. The system is fully mobile and has proven to be time-saving when compared to other systems. The following list provides the features of the system:

Time and Effort Savings

- **CANVAS DATA**
Canvas Data parses and aggregates more than 280 million rows of Canvas usage data generated daily.
- **CANVAS COMMONS**
Canvas Commons makes sharing a whole lot easier.
- **SPEEDGRADER ANNOTATIONS**
Preview student submissions and provide feedback all in one frame.
- **GRAPHIC ANALYTICS REPORTING ENGINE**
Canvas Analytics help you turn rich learner data into meaningful insights to improve teaching and learning.
- **INTEGRATED MEDIA RECORDER**
Record audio and video messages within Canvas.
- **OUTCOMES**
Connect each learning outcome to a specific goal, so results are demonstrated in clearly measurable ways.
- **MOBILE ANNOTATION**
Open, annotate, and submit assignments directly within the Canvas mobile app.
- **AUTOMATED TASKS**
Course management is fast and easy with automated tasks.
- **NOTIFICATION PREFERENCES**

Receive course updates when and where you want - by email, text message, even Twitter or LinkedIn.

- **EASE OF USE**
A familiar, intuitive interface means most users already have the skills they need to navigate, learn, and use Canvas.
- **IOS AND ANDROID**
Engage students in learning anytime, anywhere from any computer or mobile device with a Web-standard browser.
- **USER-CUSTOMIZABLE NAVIGATION**
Canvas intelligently adds course navigation links as teachers create courses.
- **RSS SUPPORT**
Pull feeds from external sites into courses and push out secure feeds for all course activities.
- **DOWNLOAD AND UPLOAD FILES**
Work in Canvas or work offline—it's up to you.
- **SPEEDGRADER**
Grade assignments in half the time.

Student Engagement

- **ROBUST COURSE NOTIFICATIONS**
Receive course updates when and where you want—by email, text message, and even Facebook.
- **PROFILE**
Introduce yourself to classmates with a Canvas profile.
- **AUDIO AND VIDEO MESSAGES**
Give better feedback and help students feel more connected with audio and video messages.
- **MULTIMEDIA INTEGRATIONS**
Insert audio, video, text, images, and more at every learning contact point.
- **EMPOWER GROUPS WITH COLLABORATIVE WORKSPACES**
By using the right technologies in the right ways, Canvas makes working together easier than ever.
- **MOBILE**
Engage students in learning anytime, anywhere from iOS or Android, or any mobile device with a Web-standard browser.
- **TURN STUDENTS INTO CREATORS**
Students can create and share audio, video, and more within assignments, discussions, and collaborative workspaces.
- **WEB CONFERENCING**
Engage in synchronous online communication.

- **OPEN API**
With its open API, Canvas easily integrates with your IT ecosystem.
- **BROWSER SUPPORT**
Connect to Canvas from any Web-standard browser.
- **LTI INTEGRATIONS**
Use the tools you want with LTI integrations.
- **MODERN WEB STANDARDS**
Canvas is built using the same Web technologies that power sites like Google, Facebook, and Twitter.

Lossless Learning

- **CANVAS POLLS**
Gauge comprehension and incorporate formative assessment without the need for “clicker” devices.
- **MAGICMARKER**
Track in real-time how students are performing and demonstrating their learning.
- **QUIZ STATS**
Analyze and improve individual assessments and quiz questions.
- **LEARNING MASTERY FOR STUDENTS**
Empower students to take control of their learning.

(Source: <https://www.canvaslms.com/higher-education/features>)

Capitol Technology University has been using Canvas for over four years. Canvas has proven to be a completely reliable LMS system that provides the necessary technological support for distance education/online learning.

L. Adequacy of financial resources with documentation (as outlined in COMAR 13B.02.03.14):

- 1. Complete Table 1: Resources. Finance data for the first five years of the program implementation are to be entered. Figures should be presented for five years and then totaled by category for each year.**

TABLE 1: RESOURCES

Resource Categories	Year 1	Year 2	Year3	Year 4	Year 5
1. Reallocation Funds	\$25,000	\$0	\$0	\$0	\$0
2. Tuition/Fee Revenue (c + g)	\$122,825	\$235,170	\$437,805	\$565,515	\$759,990
a. Number of F/T Students	0	0	0	0	0
b. Annual tuition/Fee rate	\$0	\$0	\$0	\$0	\$0
c. Total F/T Revenue (a x b)	\$0	\$0	\$0	\$0	\$0
d. Number of P/T Students	14	26	47	59	77
e. Credit Hour Rate	\$585	\$603	\$621	\$639	\$658
f. Annual Credit Hour	15	15	15	15	15
g. Total P/T Revenue (d x e x f)	\$122,850	\$235,170	\$437,805	\$565,515	\$759,990
3. Grants, Contracts and Other External Sources	0	0	0	0	0
4. Other Sources	0	0	0	0	0
TOTAL (Add 1 – 4)	\$147,850	\$235,170	\$437,805	\$565,515	\$759,990

- 2. Provide a narrative rationale for each of the resource categories. If resources have been or will be reallocated to support the proposed program, briefly discuss those funds.**

a. Reallocated Funds

Capitol Technology University has reallocated funds during Year 1 for support of program and course development, online support, office materials, travel, professional development, and initial marketing. There is no substantial impact on the institution because of the reallocation of these funds. The reallocated funds will be recovered after the first year. The program is expected to be self-sustaining after Year 1.

b. Tuition and Fee Revenue

Tuition is calculated to include an annual 2.5% tuition increase. A 20% attrition rate has been calculated.

c. Grants and Contracts

There are currently no grants or contracts.

d. Other Sources of Funds

There are currently no other sources of funds.

e. Total Year

No additional explanation or comments needed.

3. **Table 2: Expenditure.** Finance data for the first five years of the program implementation are to be entered. Figures should be presented for five years and then totaled by category for each year.

TABLE 2: EXPENDITURES
Courses are taught by adjunct professors.

Expenditure Category	Year 1	Year2	Year 3	Year 4	Year 5
1. Faculty (b + c below)	\$32,870	\$73,956	\$139,696	\$157,773	\$175,495
a. #FTE	2	4	7.5	8	9
b. Total Salary	\$27,392	\$54,784	\$102,720	\$109,568	\$146,246
c. Total Benefits (20% of salaries)	\$5,478	\$10,957	\$20,544	\$21,914	\$29,249
2. Admin Staff (b + c below)	\$4,798	\$4,798	\$5,090	\$5,243	\$5,243
a. #FTE	.07	.07	.07	.07	.07
b. Total Salary	\$3,966	\$4,084	\$4,207	\$4,333	\$4,333
c. Total Benefits	\$833	\$858	\$883	\$910	\$910
3. Support Staff (b + c below)	\$29,039	\$57,475	\$86,400	\$114,950	\$142,500
a. #FTE	.5	1.00	1.5	1.75	2.5
b. Total Salary	\$24,000	\$47,500	\$72,000	\$83,125	\$118,750
c. Total Benefits	\$5,039	\$9,975	\$14,400	\$16.625	\$23,750
4. Technical Support and Equipment	\$1,575	\$2,925	\$5,288	\$6,637	\$8,662
5. Library	\$0	\$0	\$0	\$0	\$0
6. New or Renovated Space	\$0	\$0	\$0	\$0	\$0
7. Other Expenses	\$55,763	\$68,927	\$79,543	\$83,298	\$96,575
TOTAL (ADD 1-7)	\$124,045	\$208,081	\$316,017	\$367,901	\$428,475

1. **Provide a narrative rationale for each expenditure category. If expenditures have been or will be reallocated to support the proposed program, briefly discuss those funds.**

a. Faculty

Table 2 reflects the faculty hours in total, but this does not imply that these are new hire requirements.

b. Administrative Staff

Capitol Technology University will continue with current the administrative staff through the proposed time period.

c. Support Staff

Capitol will continue with current administrative staff through Year 1. Additional support staff will be added in Year 2.

d. Technical Support and Equipment

Software for courses is available free to students or is freeware. Additional licenses for the LMS will be purchased by the university at the rate of \$50 per student. No additional equipment is needed.

e. Library

Money has been allocated for additional materials to be added to the on campus and virtual libraries to ensure the literature remains current and relevant. However, it has been determined that the current material serves the needs of this degree due to the extensive online database.

f. New or Renovated Space

No new or renovated space is needed.

g. Other Expenses

Funds have been allocated for office materials, travel, professional development, course development, marketing, additional scholarships.

h. Total Year

No additional explanation or comments needed.

M. Adequacy of Provisions for Evaluation of Program (as outlined in COMAR 13B.02.03.15):

1. Discuss procedures for evaluating courses, faculty and student learning outcomes.

The assessment process at the university consists of a series of events throughout the Academic Year. The results of each event are gathered by the University Assessment Team and stored in Canvas for analysis and use in annual reports, assessments, etc. The University Assessment Team analyzes the results, develops any necessary action plans, and monitors implementation of the action plans.

Academic Year Assessment Events:

Fall Semester:

- At the August Faculty Retreat, the faculty reviews any outstanding student learning challenges that have not been adequately addressed. The issues are brought to the University

- Academic Dean for review and development of implementation plans.
- Faculty submit performance plans consistent with the mission and goals of the university and department. The document is reviewed and approved with the University Academic Dean.
- Department Chairs and University Academic Dean review the Graduating Student Survey data.
- Department Chairs and University Academic Dean review student internship evaluations.
- Department Chairs and University Academic Dean review grade distribution reports from the spring and summer semesters.
- Department Chairs and University Academic Dean review student course evaluations from the Summer Semester.
- Departments conduct Industrial Advisory Board meetings to review academic curriculum recommendations. The Advisory Board meets to begin curriculum review or address special issues that may arise related to curriculum. Based on an analysis and evaluation of the results, the University Academic Dean, faculty and the advisory boards will develop the most effective strategy to move the changes forward.
 - NOTE: A complete curriculum review for degrees in each department occurs every two years. In most cases, the changes only require that the University Academic Dean inform the Chief Academic Officer and provide a report that includes a justification and the impact of the changes as well as a strategic plan. Significant changes normally require the approval of the Chief Academic Officer and the Executive Council.
- University Academic Dean and Vice President for Academic Affairs attend the Student Town Hall and review student feedback with department chairs.
- Department Chairs conduct interviews with potential employers at our Career Fair.
- Post-residency, the University Academic Dean meets with the faculty to review the student learning progress and discuss needed changes.

Spring Semester:

- Faculty Performance Plans are reviewed with faculty to identify issues of divergence and to adjust the plan as needed.
- Department Chairs and University Academic Dean review grade distribution reports from the Fall Semester.
- Department Chairs and University Academic Dean review the Graduating Student Survey data.
- Department Chairs and University Academic Dean review student course evaluations from the Fall Semester and the Spring Semester (in May before the Summer Semester begins).
- Department Chairs and University Academic Dean meet to review the content of the graduating student, alumni, and course surveys to ensure the surveys continue to meet the university's assessment needs.
- At Annual Faculty Summit in May, the faculty review and discuss student learning challenges from the past academic year and provide recommendations to the Academic Dean for review and development of implementation plans.
- Department Chairs conduct interviews with potential employers at our Career Fair.
- Departments conduct Industrial Advisory Board meetings to review academic curriculum recommendations.

In addition to these summative assessments, the University Academic Dean meets with the Department Chairs on a weekly basis to review current student progress. This formative assessment allows for immediate minor changes, which increase faculty effectiveness and, ultimately, student outcomes.

The Faculty Senate meets monthly during August through April. The Faculty Senate addresses issues that impact student outcomes as those issues emerge. The leadership of the Faculty Senate then provides a report on the matter to the University Academic Dean. The report may include a recommendation or a request to move forward with a committee to further examine the issue. In most cases, the changes only require the University Academic Dean to inform the Chief Academic Officer and provide a report that includes a justification and the impact of changes as well as a strategic plan. Significant changes normally require the approval of the Chief Academic Officer and the Executive Council.

- 2. Explain how the institution will evaluate the proposed program's educational effectiveness, including assessments of student learning outcomes, student retention, student and faculty satisfaction, and cost-effectiveness.**

Student Learning Outcomes:

Student learning outcomes for the proposed M.S. in Aviation will be measured using the instruments identified in Section G and Section M as well as the assigned rubrics and assessment measures (e.g., competency exams/projects, case study exams) dictated by the accreditation requirements of the university's regional accreditor [i.e., Middle States Commission in Higher Education (MSCHE)] and our degree specific accrediting organizations (i.e., IACBE, ABET, NSA, DHS). This program is designed to meet the requirements of MSCHE as well as IACBE. The program will be reviewed for accreditation by MSCHE and IACBE. The university is in good standing with all its accrediting bodies.

Student Retention:

The University maintains a comprehensive student retention program under the Vice President for Student Engagement. The program assesses student retention at all levels, including individual courses and degree. During the semester and term, the University's Drop-Out Detective capability, within its Learning Management System (Canvas), provides an early alert at the course level to potential issues related to retention. Within the Office of Student Life, Academic Advisors monitor Drop-Out Detective and contact students who appear to have issues affecting their academic performance. The Graduate Academic Advisors work with each student to create a plan to remove any barriers to success. The Graduate Academic Advisors also work with the course instructors as needed to gain additional insight that may be helpful to correcting the situation.

Each student also meets with their Academic Advisor each semester to evaluate their progress toward degree completion. An updated plan of action is developed for each student for their next semester's registration and each succeeding semester through degree completion.

The Vice President for Student Engagement also meets on a regular basis with the Vice President of Academics/Chief Academic Officer to review the student retention within each degree program and address any issues that appear to be impediments to degree completion.

Student and Faculty Satisfaction:

Evaluations and assessment of Student and Faculty satisfaction occur every semester. Faculty members are evaluated every semester by students enrolled in their courses. Students are required to complete a course evaluation online within a specified time frame at the end of the semester for every enrolled course or they are locked out of Canvas (the University's Learning Management System) until they complete each survey. Every faculty member is also required to review each of their courses for the semester.

The Department Chairs and University Academic Dean review the student evaluations for every course offered at the University. The Department Chairs and University Academic Dean also review faculty satisfaction every semester. If changes are needed at the course level, the changes are developed and implemented by the faculty responsible for the courses upon approval of the University Academic Dean. If changes are needed at the faculty level, the Department Chairs will make the changes. At the end of this cycle, an evaluation is repeated and the results are analyzed with the appropriate stakeholders regarding the effectiveness of the changes. This is an ongoing process. The University has a team in charge of outcomes and assessment supporting the formal assessment measures.

Cost Effectiveness:

Based on the year-long inputs, evaluations, and reviews described in Section M from faculty, students, industry representatives, and Department Chairs, the University Academic Dean prepares the proposed academic budget for each program for the upcoming year. Budget increases are tied to intended student learning improvements and key strategic initiatives.

Each academic program is also monitored by the Vice President for Finance and Administration throughout every semester and term for its cost effectiveness. Additionally, the revenue and costs of every University program are reviewed annually by the Executive Council and Board of Trustees prior to approving the next year's budget.

N. Consistency with the State's Minority Student Achievement goals (as outlined in COMAR 13B.02.03.05 and in the State Plan for Post-Secondary Education):

- 1. Discuss how the proposed program addresses minority student access & success, and the institution's cultural diversity goals and initiatives.**

Capitol Technology University is a majority/minority school. Our programs attract a diverse set of students. Special attention is provided to recruit females into the STEM and multidisciplinary programs at all degree levels – undergraduate, Master's, and doctoral. The University also recruits minority populations for all of its undergraduate degrees as well as for its graduate level degrees: M.S. in Computer Science, M.S. in Cyber Analytics, M.S. in Cyber and Information Security, M.S. in Electrical Engineering, M.S. in Information Systems Management, M.S. in Internet Engineering, M.S. in Unmanned and Autonomous Systems Policy and Risk Management, M.B.A., T.M.B.A. Business Analytics and Data Science, T.M.B.A. in Cybersecurity, D.Sc. in Cybersecurity, Ph.D. in Business Analytics and Decision Sciences, Ph.D. in Technology, Ph.D. in Technology/M.S. in Research Methods Combination Program, and Ph.D. in Unmanned Systems Applications. The same attention will be given to the M.S. in Aviation.

O. Relationship to Low Productivity Programs Identified by the Commission:

- 1. If the proposed program is directly related to an identified low productivity program, discuss how the fiscal resources (including faculty, administration, library resources and general operating expenses) may be redistributed to this program.**

This program is not associated with a low productivity program identified by the commission.

P. Adequacy of Distance Education Programs (as outlined in COMAR 13B.02.03.22)

- 1. Provide affirmation and any appropriate evidence that the institution is eligible to provide Distance Education.**

Capitol Technology University is fully eligible to provide distance education. The University has a long history of providing high-quality distance education. The University is accredited regionally by the Middle States Commission in Higher Education (MSCHE) and through four specialized accrediting organizations: International Accreditation Council of Business Education (IACBE), Accreditation Board for Engineering and Technology (ABET), NSA, and DHS. All five accrediting organizations have reviewed the University's distance education program as part of their accreditation process. Capitol Technology University is fully accredited by MSCHE, IACBE, ABET, NSA, and DHS. The University is in good standing with all its accrediting bodies.

- 2. Provide assurance and any appropriate evidence that the institution complies with the C-RAC guidelines, particularly as it relates to the proposed program.**

Capitol Technology University has a long history of providing high quality distance education/online learning that complies with the Council of Regional Accrediting Commissions (C-RAC) Interregional Guidelines for the Evaluation of Distance Education. The university will also continue to comply with the C-RAC guidelines with the proposed M.S. in Aviation program.

- a. Council of Regional Accrediting Commissions (C-RAC) Interregional Guidelines for the Evaluation of Distance Education.**

- 1. Online learning is appropriate to the institution's mission and purposes.**

Online learning is consistent with the institution's mission, purpose and history. Please refer to Section A of this proposal.

- 2. The institution's plans for developing, sustaining, and, if appropriate, expanding online learning offerings are integrated into its regular planning and evaluation processes.**

All programs at the University – online, hybrid, and on-ground – are subject to the same regular planning, assessment, and evaluation processes. Please see Section M of this

proposal for the detailed process.

3. Online learning is incorporated into the institution's systems of governance and academic oversight.

All programs at the University – online, hybrid, and on-ground – are subject to the same systems of governance and academic oversight. Please refer to Section G and Section M of this proposal.

4. Curricula for the institution's online learning offerings are coherent, cohesive, and comparable in academic rigor to programs offered in traditional instructional formats.

Online programs/courses meet the same accreditation standards, goals, objectives, and outcomes as traditional instruction at the University. The online course development process incorporated the Quality Matters research-based set of standards for quality online course design to ensure academic rigor of the online course is comparable to the traditionally offered course. The University Academic Dean, chairs, and faculty review curriculum annually. Courses are reviewed at the end of each term of course delivery. This process applies to online and traditional courses. In addition, advisory boards are engaged in the monitoring of course quality to ensure quality standards are met regardless of the delivery platform.

5. The institution evaluates the effectiveness of its online learning offerings, including the extent to which the online learning goals are achieved, and uses the results of its evaluations to enhance the attainment of the goals.

Online programs/courses meet the same accreditation standards, goal, objectives, and outcomes as traditional classroom delivery. Learning platforms are chosen to ensure high standards of the technical elements of the course. The University Academic Dean monitors any course conversion from in-class to online to ensure the online course is academically equivalent to traditionally offered course and that the technology is appropriate to support the expected rigor and breadth of the programs courses.

6. Faculty responsible for delivering the online learning curricula and evaluating the students' success in achieving the online learning goals are appropriately qualified and effectively supported.

The Department of Astronautical Engineering, where this degree will be sponsored, is staffed by qualified teaching chair, and other appropriately credentialed faculty.

The evaluation of programs and courses are done using the same process as all other programs at the University (please see Section M of this document). All Capitol Technology University faculty teach in the traditional classroom environment and online. (Please see qualifications in Section I of this document.)

7. The institution provides effective student and academic services to support students enrolled in online learning offerings.

Students can receive assistance in using online learning technology via several avenues. Student aides are available to meet with students and provide tutoring support in both subject matter and use of the technology. Tutors are available in live real-time sessions using Adobe Connect or other agreed upon tools. Pre-recorded online tutorials are also available.

In addition to faculty support, on ground and online tutoring services are available to students in a one-on-one environment.

Laboratories (on ground and virtual) are available for use by all students and are staffed by faculty and tutoring staff who provide academic support.

Library services and resources are appropriate and adequate. Please refer to Section J of this document and the attached letter from the University President. The library adequately supports the students learning needs.

8. The institution provides sufficient resources to support and, if appropriate, expand its online learning offerings.

The University has made the financial commitment to the program (please refer to Section L). The University has a proven track record of supporting degree completion.

9. The institution assures the integrity of its online offerings.

Currently employed faculty act as an internal advisory board for program changes including course and program development. All faculty are selected on domain experience and program-related teaching experience.

When new faculty or outside consultants are necessary for the design of courses offered, our Human Resource Department initiates a rigorous search and screening process to identify appropriate faculty to design and teach online courses. Again, all faculty are selected on domain experience and program-related teaching experience

The University online platforms offer several avenues to support instructors engaged in online learning. The Director of our Online Learning Division is highly skilled and trained in faculty development. Several seminars and online tutorials are available to the faculty every year. Mentors are assigned to new faculty. Best practice sharing is facilitated through the University Academic Dean and Department chair and through formal meetings.

The assessment for distance learning classes/students is the same as for all programs at the University. Faculty provide required data on student achievement. The Learning Management System provides data on student achievement. Proof of these assessments is available during the class and post class to the Vice President of Academic Affairs, University Academic Dean, and Department Chairs. On an annual basis, the information is reported to accreditation authorities such as MSCHE and IACBE.