UNIVERSITY OF MARYLAND EASTERN SHORE
Office of the President

October 29, 2019

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

Dear Secretary Fielder:

The University of Maryland Eastern Shore (UMES) respectfully seeks approval of a substantial modification to offer our existing B.S. in Aviation Science program as an off-campus program at Prince George's Community College (PGCC).

As discussed in the substantial modification proposal, offering our B.S. in Aviation Science program at PGCC will enhance the ability of UMES to not only provide greater access to our degree program, but also further support the aviation industry.

If you have any questions or concerns, please feel free to contact me.

Sincerely,

Heidi M. Anderson, Ph.D.
President

cc: Dr. Antoinette Coleman, Associate Vice Chancellor for Academic Affairs, USM
cc: Dr. Nancy S. Niemi, Provost and Vice President for Academic Affairs, UMES
cc: Dr. Latasha Wade, Interim Associate Vice President for Academic Operations, UMES

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

Institution Submitting Proposal	University of Maryland Eastern Shore

Each action below requires a separate proposal and cover sheet.

- ○ New Academic Program
- ○ New Area of Concentration
- ○ New Degree Level Approval
- ○ New Stand-Alone Certificate
- ◉ Off Campus Program
- ○ Substantial Change to a Degree Program
- ○ Substantial Change to an Area of Concentration
- ○ Substantial Change to a Certificate Program
- ○ Cooperative Degree Program
- ○ Offer Program at Regional Higher Education Center

Payment Submitted: ◉ Yes ○ No | Payment Type: ◉ R*STARS ○ Check | Payment Amount: 250.00 | Date Submitted: 10/29/2019

Department Proposing Program	Department of Engineering and Aviation Sciences	
Degree Level and Degree Type	Undergraduate; Bachelor of Science	
Title of Proposed Program	Aviation Science with a concentration in Professional Pilot	
Total Number of Credits	120	
Suggested Codes	HEGIS: 51001.00	CIP: 52.9999
Program Modality	◉ On-campus	○ Distance Education (*fully online*)
Program Resources	○ Using Existing Resources	◉ Requiring New Resources
Projected Implementation Date	◉ Fall ○ Spring ○ Summer	Year: 2021
Provide Link to Most Recent Academic Catalog	URL: http://catalog.umes.edu/	
Preferred Contact for this Proposal	Name: Latasha Wade, Pharm.D. Title: Interim Associate Vice President Phone: (410) 651-6038 Email: lwade@umes.edu	
President/Chief Executive	Type Name: Heidi M. Anderson, Ph.D. Signature: Heidi M. Anderson Date: 10-29-19	
	Date of Approval/Endorsement by Governing Board:	

Revised 3/2019

A. Centrality to Institutional Mission and Planning Priorities:

1. Provide a description of the program, including each area of concentration (if applicable), and how it relates to the institution's approved mission.

The University of Maryland Eastern Shore (UMES) Aviation Science program's educational mission is the preparation of students for challenging and rewarding careers in the aviation industry. The UMES Aviation Sciences program is Maryland's only four-year, bachelor's degree program in aviation. The university offers a Bachelor of Science in Aviation Science degree with concentrations in Professional Pilot, Aviation Management, Aeronautics, and Software Engineering. Job growth in the aviation industry is tremendous, providing outstanding career opportunities for new graduates. Domestic air transportation is expected to grow at a rate of nearly 3% a year through 2036, as such our graduates enjoy an excellent placement rate. The program has partnerships with industries that provide students with enhanced learning opportunities through co-ops and internships.

In addition to the 4-year residential program on Princess Anne campus, the Aviation Sciences program offers students who have completed a 2-year associate degree in aviation at our partner school, the Community College of Baltimore County, or other community colleges, the opportunity to complete a bachelor's degree. The program also has a mechanism to grant academic credit towards the Professional Pilot concentration for previously-earned pilot and flight instructor certificates and ratings.

The mission of the Aviation Sciences program ties in well with the mission of the Department of Aviation Science which is according to Dr. Yuanwei Jin, Professor and Chair of the Department of Engineering and Aviation Sciences, is "..... to provide quality professional degree programs, to prepare students for employment in their chosen field, to establish close partnerships with and facilitate technology transfers to industry and government, to prepare students for advanced studies, to contribute to economic development of the State, and to provide related service to the campus community and the community at large. Also, the mission of the UMES Aviation Sciences program is to educate future professional pilots, managers and technical specialists for the field of aviation through industry immersion."

Lastly the missions of the Aviation Sciences academic programs and the Department of Engineering and Aviation Sciences are highly influenced by and tightly coupled to the Mission of the University of Maryland Eastern Shore which is "The University of Maryland Eastern Shore (UMES), the state's historically black 1890 land-grant institution, has its purpose and uniqueness grounded in distinctive learning, discovery and engagement opportunities in the arts and sciences, education, technology, engineering, agriculture, business and health professions. UMES is a student-centered, doctoral research degree-granting university known for its nationally accredited undergraduate and graduate programs, applied research, and highly valued graduates.

UMES provides individuals, including first-generation college students, access to a holistic learning environment that fosters multicultural diversity, academic success, and intellectual and social growth. UMES prepares graduates to address challenges in a global knowledge-based economy while maintaining its commitment to meeting the workforce and economic development needs of the Eastern Shore, the state, the nation, and the world." (https://www.umes.edu/About/Pages/Mission/)

Consistent with its mission, UMES seeks to expand its capacity to offer unique and/or critical certificate and degree programs, including our signature undergraduate degree program in Aviation Science. By adding Prince George's Community College (PGCC) as an additional location, UMES will not only be able to provide greater access to its undergraduate degree program in Aviation Science given the location of PGCC in Largo, Maryland, but UMES will also be able to further support the aviation industry which is experiencing continued growth within the State of Maryland.

Finally, according to the 2017-2021 State Plan for Postsecondary Education, the three goals seen as critical by the Maryland Higher Education Commission (MHEC) are student access to higher education and postsecondary opportunities, student success, and innovation. Further, the plan intends to "support the unique missions of Historically Black Colleges and Universities."

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

The addition of offering the Bachelor of Science in Aviation Science with concentrations in Aeronautics, Aviation Management, Professional Pilot, and Software Engineering at Prince George's Community College supports the following goals from UMES President's Strategic Plan 2020:

GOAL I: Increasing Access, Affordability, and Degree Attainment

Sub-Goal 1.1 Increase student enrollment to include community college transfers, non-traditional students, international students and veterans.

GOAL II: Become Eminent in Research, Innovation, and Economic Competitiveness

Sub-Goal 2.2 Foster and facilitate interdisciplinary collaboration for research on local, regional, and global challenges to include workforce needs.

GOAL III: Continue to Contribute Significantly to Meeting the Educational Needs of the State of MD

Sub-Goal 3.1 Improve teaching quality across all programs to positively impact student learning.

GOAL IV: Maximize University Resources

Sub-Goal 4.6 Enhance philanthropic engagement to build support for faculty, students, innovative programs, and athletics.

In terms of evidence which affirms offering the undergraduate program, Aviation Science, at PGCC is an institutional priority, this can be gleaned from the mission statements of the Aviation Science program and the Department of Engineering and Aviation Sciences which has been presented in section A1. Additional information can

found about the UMES Institutional Core Values located at https://www.umes.edu/President/Pages/Institutional-Core-Values/.

University of Maryland Eastern Shore

Learning and Leadership - Strategies for Student Success and Global Competence

Institutional Core Values

- Providing high quality undergraduate and graduate programs that will equip students with the knowledge and skills necessary for the challenges of America and other global societies.
- Affirming its role as the State's 1890 land-grant institution by providing to citizens opportunities and access that will enhance their lives and enable them to develop intellectually, economically, socially, and culturally.
- Demonstrating shared-governance through recognition of the viewpoints that all members of the university community contribute to the institution.
- Appreciating diversity in its student body, faculty, staff and administration through commitment to tolerance, freedom of expression, and celebration of other cultures.
- Adhering to the highest standards of honesty, fairness, trust and integrity in both personal and professional behavior.
- Promoting student-centeredness as the heart of the enterprise.
- Focusing on character development through learning and leadership experiences.

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.)

UMES will provide the resources necessary for the operation and success of the proposed additional location of the Aviation Science program using the same process and support mechanism which are in place for currently offered academic programs at the university. In addition to the typically required funding requirements of an additional location academic programs, the university will ensure funding is provided for marketing, professional development of staff and faculty, office supplies, and course development and AABI accreditation fees.

4. Provide a description of the institution's a commitment to:
   a) ongoing administrative, financial, and technical support of the proposed program

The proposed off-site Aviation Science program at PGCC is an integral part of the university's Strategic Plan 2020, particularly Goals I, II, III, and IV. As such, funding to support the off-site academic program will be included in future fiscal year budgets.

   b) continuation of the program for a period of time sufficient to allow enrolled students to complete the program.

The University of Maryland Eastern Shore is fully committed to providing funding for the continuation of the proposed off-site Aviation Science program at PGCC to allow for enrolled students to complete the academic degree 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 the advancement and evolution of knowledge

This program is intended to address one of the challenges in workforce demand in the state for the aviation and aerospace industry, in particular, a critical pilot shortage and a lack of technically qualified professionals in the aviation and aerospace industry. Professional pilot demand is strong, and the region's airlines are facing a pilot shortage. U.S. Airlines are currently facing a pilot shortage that is expected to grow to a deficit of more than 15,000 pilots by 2026.[1] Regional airlines, normally the pipeline for pilots to major airlines, are already facing the shortage, and are responding with signing bonuses of up to $15,000.[2] Airlines are seeking partnerships with 4-year universities, since pilots who graduate from these programs can fly for the airline with as little as 1000 hours of total flight time, as compared to 1500 hours for pilots without a Bachelor's degree.[3] Additionally, the US military is facing a similarly dire shortage of pilots and is now offering up to $455,000 retention bonuses.[4] UMES is well-positioned to fill this gap and provide the PGCC population with the education necessary to meet this objective.

    b) Societal needs, including expanding educational opportunities and choices for minority and educationally disadvantaged students at institutions of higher education

Offering an undergraduate degree in Aviation Science at PGCC will expand the educational opportunities of minority students in the State of Maryland. Part of UMES' mission is to provide opportunities to students who are the first in their families to attend college and opportunities to students of color who aspire to attend a university to earn a four-year Bachelor's degree. The partnership between PGCC and UMES to offer the B.S. in Aviation Science will afford UMES the opportunity to meet its one of its mission and strategic goals as it continues to serve the citizens of the State of Maryland.

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

Currently, UMES is the only university in the State of Maryland to offer a four-year degree program for professional pilots. By approving the expansion of the Aviation Science program to be offered on the PGCC campus, this will strengthen and expand the capacity of UMES to provide high quality and unique educational academic programs to the citizens of Maryland. Also, offering the Professional Pilot program at PGCC will allow UMES to attracted more international students who may be work placed bound and unable to relocate to the eastern shore of Maryland to attend college. As part of the efforts to attract international students who may reside or wish to reside on the westerns shore of Maryland to enroll in our Aviation Science program, UMES intends to hire a Chief Flight Instructor and certify its flight school under FAA Part 141. After that action, UMES

will include the Professional Pilot program with its many other Student and Exchange Visitor Program (SEVIS) approved programs. This action will again strengthen and expand the capacity of UMES to provide high quality and unique academic programs.

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

As presented on the Maryland Higher Education Commission website, the 2017-2021 State Plan for Postsecondary Education: Student Success with Less Debt outlines three primary goals for the postsecondary community in Maryland.

> **Access:** Ensure equitable access to affordable and quality postsecondary education for all Maryland residents.
>
> **Success:** Promote and implement practices and policies that will ensure student success.
>
> **Innovation:** Foster innovation in all aspects of Maryland higher education to improve access and student success.

For the **Access** goal, the approval of an additional location for the Aviation Science program will enhance UMES' ability to support **Strategy 1**: Continue to improve college readiness among K-12 students, particularly high school students. Currently, UMES Aviation Science program is working with the Maryland State Department of Education (MSDE) and District of Columbia Public Schools to implement articulation agreements which will allow students who as they complete as part of their secondary education certain requirements will be given college credit in the Aviation Science program at UMES. This action supports **Access** goal, **Strategy 1 sub-strategy**: Align academic programs with CTE programs for a smooth transition.

For the **Success** goal, the proposed UMES Aviation Science program offered at PGCC will support UMES' ability to implement **Strategy 4**: Continue to ensure equal educational opportunities for all Marylanders by supporting all postsecondary institutions. Particularly the following **sub-strategies**: 1. Continue to ensure that all policies and practices reflect the dedication and commitment to equal education opportunities and 2. Support the unique missions of Historically Black Colleges and Universities. Expansion of four-year Aviation Science program offerings to PGCC will allow UMES to fulfill its mission of providing educational opportunities to ".....individuals, including first-generation college students, access to a holistic learning environment that fosters multicultural diversity, academic success, and intellectual and social growth."

For the **Foster** goal, **Strategy 8**: Develop new partnerships between colleges and businesses to support workforce development and improve workforce readiness, having the UMES undergraduate Aviation Science program located on the PGCC campus will allow the fostering of government and industry partners as many of the key federal agencies related to the aviation industry are located in a relatively short distance from the PGCC campus and a host of aviation corporation have major facilities near the campus.

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.

Graduates of the Bachelor of Science, Aviation Science degree will enter the Aviation Industry career field based on their Area of Concentration (AOC).

Professional Pilot AOC graduates will qualify for entry level positions as commercial pilots or flight instructors. Upon acquiring sufficient flight hours post-degree, graduates will qualify for a number of pilot positions with both commercial and government entities in positions such as: Corporate or Charter pilot, Airline First Officer, Instructor Pilot, and Cargo pilot.

Aviation Management AOC graduates will qualify for entry-level management positions at airlines, airports, fixed-base-operators, corporate flight departments and aircraft manufacturers. Additionally, these graduates may be employed by government organizations such as the Department of Transportation, the Federal Aviation Administration and the Transportation Security Administration, as well as State transportation and aviation administrations. Titles for these positions include: Management Assistant, Administrative Officer, Program Analyst, Assistant Airport Manager, Airport Operations Officer, Airfield Operations Manager, Flight Dispatcher, and Aircrew Scheduler.

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

Overall, the aviation industry is projected to grow, with the International Air Transport Association (IATA) projecting a doubling of worldwide airline passenger numbers over the next 20 years.[7] The projected growth in the US is strong, though somewhat less, with the FAA projecting domestic passenger growth of 1.8 percent per year over the same time period.[8]

This growth, in part, fuels demand for Commercial Pilots at all levels. The pilot shortage is well documented and will be discussed in more detail in part 3, below. But, According to the Occupational Outlook Handbook of the Bureau of Labor Statistics, the Airline and Commercial Pilot field will growth by **6%** from over the period **2018 to 2028** with about **7,000** open positions[6]. It should be noted that "most job opportunities will arise from the need to replace pilots who leave the occupation permanently over the projection period.[6]"

Along with airline growth, there is the associated uptick in support services to air transport, including air traffic control, airports, and flight training operations. Additionally, the FAA projects growth in General Aviation, Unmanned Aerial Systems, and Commercial Space Operations, all of which provide opportunities for Aviation Management AOC graduates.

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.

As noted above, the pilot shortage is well documented by many sources. The Boeing Company's 2019 Pilot Outlook forecasts a worldwide need for 804,000 pilots over the next 20 years. Among those, 212,000 will be needed in North America alone.[9] Additionally, mandatory retirements for airline pilots at age 65 will result in 14,000 retirements in the next 5 years and more than 50,000 over 15 years.[10]

The combination of worldwide industry growth and retirements in the aviation industry will contribute to strong job opportunities for technically qualified Aviation graduates. The pilot shortage is resulting in salary increases, incentives, and bonuses at Regional Airlines and job prospects are historically strong for qualified pilots.

4. Provide data showing the current and projected supply of prospective graduates.

The GAO reported in 2014 that the total number of graduates from US Collegiate Professional Pilot Programs was less than 2500 per year for the years 2001 through 2012.[11] This is in stark contrast to the more than 10,000 qualified pilot needed per year over the next 20 years. Additionally, the number of Airline Transport Pilots (ATP), the level of certification necessary to fly for an airline, increased by a net of less than 3,000 from 2017-2018; Further, the total number of ATPs in the U.S. is a little over 162,000.[12] With a projected need of more than 212,000 new pilots at this level, the challenge to fill the pilot shortage is daunting.

Though there has been some student enrollment growth in Professional Pilot degree programs in the U.S. over the last few years, many factors combine to create constraints on the capacity of pilot programs to meet demand. Among those are the high cost of flight training and the shortage of flight instructors at all levels. These constraints to pilot production were detailed by the GAO in 2018.[13] While the numbers of pilot graduates may grow conservatively in the coming years, that growth will be insufficient to meet new demand.

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.

   Currently, UMES is the only university in the State of Maryland that offers an undergraduate degree in Aviation Science. Delaware State University in Delaware and Hampton University and Liberty University in Virginia offer Aviation Science Bachelor's degree programs.

2. Provide justification for the proposed program.

According to the Federal Aviation Administration FY 2020 President's Budget submission "America relies on civil aviation. A cornerstone of our nation's economy, civil aviation contributes approximately $1.6 trillion annually to the national economy, provides 11 million jobs, and constitutes 5.1 percent of the gross domestic product.[5]" While aviation is a cornerstone of the US economy, US airlines are currently facing a pilot shortage that is expected to grow to a deficit of more than 15,000 pilots by 2026.[1]

Hence, the Aviation Science program at UMES as the only state-approved academic program in Aviation Science is uniquely positioned to expand its program offering the PGCC which is ideally situated near Washington DC and Baltimore, MD to provide opportunities to train future aviation professionals and pilots especially from minority and educationally disadvantaged backgrounds.

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 HBI's.

MHEC approving the proposal allowing UMES to offer the B.S. in Aviation Science at Prince George's Community College will have a positive impact on the maintenance of high-demand academic programs at HBIs like the University of Maryland Eastern Shore and increase UMES ability to serve the citizens of the State of Maryland.

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.

As one of Maryland's Historically Black institutions, the University of Maryland Eastern Shore serves an under-represented minority population, and respect and understanding of diversity is central to its mission of advancing minority student achievement. The goal of the proposed additional location of the Aviation Science program is to meet the demand for additional avenue for the citizens of Maryland to earn a degree in a rapidly growth field in general but also in particular increase the number of African American/Black Pilots in a geographical area that is searching for qualified graduates to serve in the pilot field.

Hence, by MHEC approving the proposal offering and allowing UMES to offer the Aviation Science program at Prince George's Community College will have a positive impact on the uniqueness and institutional identities and missions of HBIs such as the University of Maryland Eastern Shore and increase UMES ability to serve the citizens of the State of Maryland.

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 Aviation program at UMES has discussed for quite some time with Regional Higher Education Centers and other aviation stakeholders in the State of Maryland. Based on these discussions, it became apparent for the Aviation program to continue to serve the aviation industry and the citizen of the State of Maryland, the establish of an additional location for the Aviation Science program at Prince George's Community College was an appropriate step to take and strengthen a long-standing partnership which exists with the Community College of Baltimore County (CCBC), which offers 2-year associates degrees in Aviation. Many CCBC students who are otherwise unable to relocate or commute to UMES could be attracted to the geographically closer PGCC. Also, a dual-enrollment agreement is currently under development with Duvall High School in Prince George's County, Maryland, in which high school students in the Aerospace program at Duvall would take and receive college credits for courses at UMES. Again, the geographic proximity of PGCC in Prince George's County makes the site an attractive option for this pipeline of students. The proximity of PGCC to Patuxent Naval Air Station and NAVAIR as well as multiple military contractors provides ample opportunity for industry partnerships to support student Internships, hiring pipelines and collaborative research opportunities.

A full-time 12-month program director for the UMES PGCC Aviation Science program will be hired to oversee and promote the program at PGCC, meet prospective students, assist students with enrollment and course selection, develop industry relationships and recruit. The additional location program director will report to the chair of the Department of Engineering and Aviation Sciences and will be responsible for hiring and overseeing all faculty who teach in the program. The chair reports to the dean of the School of Business and Technology, who reports to the provost and vice president for academic affairs. The provost and vice president for academic affairs reports to the UMES president.

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

Educational Objectives:

Graduates with a Bachelor's Degree in Aviation Science will be able to:

- Prepared for graduate studies in the field of Aviation Sciences
- Demonstrate critical thinking and problem-solving skills in the field of aviation
- Demonstrate knowledge of the inner workings of the aviation industry as well as practical career applications within their specific concentration.

2. Explain how the institution will:
   a) provide for assessment of student achievement of learning outcomes in the program

Periodic assessment of the impact of the off-site Aviation program at PGCC will be monitored as part of the institutional assessment process and include an evaluation of the PGCC location against budget and enrollment projects with primary benchmarks dictated by the parameters of the semester and academic year. Data on the PGCC location will be included in the Annual Assessment report and be used to improve the quality and relevance of educational opportunities offered by UMES at PGCC. Based upon the model employed at the Universities at Shady Grove (USG), where UMES offers its Construction Management Technology and Hospitality and Tourism Management undergraduate academic programs, long-term impact of the PGCC off-site is projected to equal the graduate output of students based in Princess Anne as aviation and demand for this degree grows in Maryland.

b) document student achievement of learning outcomes in the program

Documentation of student achievement of learning outcomes in the program will conducted using assessment methods based on previously established educational objectives and learning outcomes for Aviation Science students which include the following:

- Assessing written and oral student presentations, written assignments and research projects.
- Evaluating student performance in exams, quizzes and assignments in required major courses.
- Evaluating students through a Comprehensive Exam and Senior Capstone project.

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

Aviation Sciences Program Requirements

GENERAL PROGRAM REQUIREMENTS

The Aviation Sciences program does not have any specific admissions requirements for general admission to UMES, although this is subject to change. The course sequence and prerequisites for Aviation Sciences program require that the student place into MATH 109, College Algebra, or higher (except for Aviation Electronics, which requires placement into MATH 112, Calculus I) in order to complete the program in eight semesters.

Students admitted to the University who do not place appropriately in mathematics will be permitted to enroll in the Aviation Sciences programs. These students will require additional preparatory courses at UMES prior to starting the core courses in the Aviation Sciences program, and this may extend their program by one or more semesters. Successful completion of the Bridge, Jump Start, PACE, SEA, or similar programs during the summer prior to freshman year is highly recommended.

DEPARTMENTAL REQUIREMENTS

The Aviation Sciences program consists of 120 total credit hours. Students complete 34 credit hours of Aviation core courses and choose one of four concentrations. The concentration areas are Professional Pilot, Aeronautics, Aviation Management, and Software Engineering, and each consists of 33 credit hours. The curricula include 41 credit hours of general education courses, 6 credit hours of support courses, and 6 hours of Aviation elective courses.

Total number of credits and their distribution

	Category	Distribution
I.	General Education Courses	41 credit hours
II.	Support Requirements	6 credit hours
III.	Aviation Core Requirements	34 credit hours
IV.	Concentration Requirements	33 credit hours
V.	Electives	6 credit hours

Aviation Sciences Course Descriptions

AVSC 100 First Year Orientation with Aviation Credit 1

This course offers an overview of the aviation industry and an overview of college life. This course is an orientation for incoming freshmen and covers stress and time management and life skills. In addition, the course explores ethics, educational requirements, FAA requirements, scholarship availability, career opportunities, and the need to be trained.

AVSC 112 Aviation Fundamentals Credit 3

This course provides a basic overview of aviation, including Fundamentals of Flight, Flight Operations, Aviation Weather, Performance and Navigation, and Integrating Pilot Knowledge and Skills. Critical thinking is stressed. Aviation Science students in the Professional Pilot Concentration should enroll concurrently in AVSC 141. Lab fee $350.

AVSC 131 Air Transportation Credit 3

This course covers the history, development, and present status of air transportation, including: government legislation, regulations, the FAA and CAB organizations and functions; classification of air carriers; facilities and airline operations; future air transportation requirements; economics and social implications.

AVSC 132 Introduction to Aviation Business Credit 3

This course is an introductory course to provide an overview of the structure of business, management and organization, human resources, financial management, production, labor-management relations, marketing, accounting, and insurance as well as the global dimensions of business and social responsibilities of business as these topics relate to aviation business. Also included is an exploration of the management of FBOs and other general aviation enterprises. Prerequisite: AVSC 131

AVSC 141 Private Pilot Ground Laboratory Credit 1

This course provides ground and simulator instruction to meet FAA private pilot aeronautical knowledge requirements. Subjects include all applicable Federal Aviation Regulations (FARs), visual flight rules (VFR) navigation, aviation weather, aircraft operations, safety considerations, etc. Training includes instruction necessary to complete the airmen knowledge requirements of the Private Pilot Airplane airmen knowledge test (FAA written exam). This course is designed for students in the Professional Pilot Concentration and should be taken concurrently with AVSC 112 Aviation Fundamentals. Co-requisite: AVSC 112

AVSC 142 Private Pilot Flight Credit 3

This course includes actual flight and simulator time to meet private pilot requirements. Topics include all FAA required maneuvers such as: aircraft pre-flight operations, airport and traffic pattern operations, flight maneuvering, flight at slow airspeeds, normal and crosswind takeoffs and landings, control and maneuvering of the aircraft solely by

reference to flight instruments, cross-country navigation, maximum performance takeoffs and landings, night flying and emergency operations. Upon successful completion of this course the student will have the aeronautical experience and skill requirements for, and will have obtained, an FAA Private Pilot Airplane Single Engine Land certificate. This course, completed together with AVSC 162, is the equivalent of AVSC 143, 153, and 163. Co-requisite: AVSC 141.

AVSC 143 Primary Flight Training I Credit 2

This course includes actual flight and simulator time to meet the requirements of the first two stages of the FAA 141 Private Pilot Flight syllabus. Topics include the FAA required maneuvers such as: aircraft pre-flight operations, airport and traffic pattern operations, flight maneuvering, flight at slow airspeeds, normal and crosswind takeoffs and landings, control and maneuvering of the aircraft solely by reference to flight instruments, cross-country navigation training, maximum performance takeoffs and landings, night flying and emergency operations. Upon completion of this course, the student will have passed the Private Pilot Stage I (pre-solo) stage check. A Flight Lab fee is charged for this course. As of the Fall 2014 semester, this fee is $2,500. Consult the Aviation Sciences Student Handbook for updated fees. Department Permission required.

AVSC 152 Meteorology & Environmental Issues Credit 3

This course covers the following topics: the atmosphere, atmospheric energy and temperature, pressure and density altitude, wind, atmospheric circulation systems, air-masses, fronts, vertical motion and stability, atmospheric moisture, tornadoes, thunderstorms, and local winds. Hazards associated with weather, such as wind shear, turbulence, icing, instrument meteorological conditions (IMC), etc. are also covered, as are applications of weather knowledge, including aviation weather resources and weather evaluation for flight. Air and noise pollution are introduced. Pre/Co-requisite: AVSC 112.

AVSC 153 Primary Flight Training II Credit 2

This course includes actual flight and simulator time to meet the requirements of the final stage of FAA Part 141 Private Pilot flight syllabus and the first stage of the FAA Part 141 Instrument Rating Flight syllabus. Topics include the FAA required maneuvers such as: solo cross-country navigation, and basic radio navigation. Upon successful completion of this course, the student will have passed the Private Pilot Stage II stage check, the Private Pilot end of course check, the FAA Private Pilot Airplane Single Engine Land practical test, and the Instrument Rating Stage I stage check. A Flight Lab fee is charged for this course. This fee may change from year to year depending on flight training cost adjustments. As of Fall 2014 semester, this fee is $6000.00. Consult the Aviation Sciences Student Handbook for updated fees. Prerequisites: AVSC 141, AVSC 143. Co-requisite: AVSC 161. Departmental permission required.

AVSC 161 Instrument Rating Ground Credit 3

This course provides ground and simulator training to meet FAA's instrument pilot aeronautical knowledge requirements. Subjects include Federal Aviation Regulations (FAR's) for instrument flight; IFR navigation; aviation weather; function, use, and limitations of flight instruments; etc. Training includes instruction necessary to complete

the airmen knowledge requirements for the Instrument Airplane airmen knowledge test (written exam). Prerequisite: AVSC 141. Co-requisite: AVSC 152. Lab Fee $350.

AVSC 162 Instrument Rating Flight Credit 3

This course provides flight and simulator training for instrument pilot operations necessary to operate an airplane safely and accurately under instrument flight rules (IFR) within the National Airspace System. Upon successful completion of this course the student will have demonstrated both the aeronautical knowledge and skill requirements for, and will have obtained, an FAA Instrument Airplane Rating. This course, completed together with AVSC 142, is the equivalent of AVSC 143, 153, and 163. Laboratory fee $250. Prerequisites: AVSC 141 and AVSC 142. Co-requisites: AVSC 161 and 152.

AVSC 163 Primary Flight Training III Credit 2

This course provides flight and simulator training for instrument pilot operations which is necessary to safely and accurately perform standard instrument approaches to operate an airplane under Instrument Flight Rules (IFR) within the National Airspace System. Upon successful completion of this course, the student will have passed the Instrument Rating Stage III and III stage checks, the Instrument Rating end-of-course check, and the FAA Instrument Airplane Rating practical test. A Flight Lab fee is charged for this course. This fee may change from year to year depending on flight training cost adjustments. As of the Fall 2014 semester, this fee is $7500.00. Consult the Aviation Sciences Handbook for updated fees. Prerequisites: AVSC 153, AVSC 161, and AVSC 152. Departmental permission is required.

AVSC 170 Software and Simulation Applications in Aviation Credit 3

This course provides an introduction to the use of software and simulation tools in support of aviation. An introduction to the use of software in support of the following will be covered: operations research as it relates to airlines, airports, and other aviation stakeholders; data management and statistical analysis; airspace and airport capacity modeling; geographic information systems; and simulation. Specific topics will be decided based on the unique and contemporary needs of the field.

AVSC 188 Flight Training Credit 0

This course provides students with flight training activities. Students in flight training shall sign up for three sections of this course each semester to ensure three half days of flight training per week. Prerequisite: Enrollment in UMES Flight Training program.

AVSC 201 The National Airspace System Credit 3

Students review federal aviation regulations (FAR), the National Airspace System (NAS) structure, equipment, and cloud clearance requirements for the different airspace classifications including special use airspace (SUA). Students study the different air traffic control (ATC) facilities, terminal and en-route, to learn the various controller positions and functions. Students use the ATC simulator to demonstrate confidence in their ability to safely control at least 10 aircraft in a high density terminal environment. Students plan a flight and fly their flight plan on the flight simulator, describing the airspace and

communications requirements as they proceed. Future plans for the NAS are discussed. Prerequisite: AVSC 112. Lab Fee $350.

AVSC 202 Air Traffic Control Credit 3

This course briefly reviews the history of the US Air Traffic Control (ATC) system. Students learn current ATC procedures and phraseology by flying and controlling air traffic in high density terminal environments. Students learn the ATC facilities and required operational positions (workstations). Teamwork, between pilots and controller, to move aircraft safely through today's ATC system is stressed. Prerequisite: AVSC 201. Lab Fee $250.

AVSC 231 Airline Management I Credit 3

This course studies the operational requirements of Part 135 and 121 carriers in the National Airspace System. Discussions include value analysis of different aircraft types for various users, cost-effective operations, marketing considerations, facilities, equipment suitability, aircraft acquisition and modernization. Typical subjects include aviation regulations, records and documents associated with air carrier operations. Prerequisite: AVSC 131 or ECON 201.

AVSC 232 Airport Management Credit 3

The student is provided knowledge of airport administration, design, and planning. Airport operations and practices discussed include security, fire protection, facility maintenance, environment, public affairs, political, social and economic issues. Prerequisites: AVSC 231 or permission of instructor.

AVSC 241 Aviation Safety Credit 3

Aviation Safety is designed to promote sound practice, and an understanding of the safety-net for commercial and general aviation. This course provides the student with a foundation and framework in aviation and transportation safety. The course objectives are: to gain an understanding of the knowledge, skills, and abilities required in aviation; to enhance the student's safety awareness; to familiarize the student with hazards associated with the aviation environment; and to impart to the student a broad understanding of the United States' safety system. Some typical areas are: safety data, investigations, aviation maintenance, collision avoidance, Cockpit Resource Management (CRM), physiology, situation awareness, and human factors. Prerequisite: AVSC 112.

AVSC 251 Commercial Pilot Ground Credit 3

In this course, ground instruction to meet FAA Commercial Pilot aeronautical Knowledge requirements is provided. Subjects include all FAR's applicable to commercial pilot privileges, limitations, and flight operations; airplane performance, aerodynamics, performance prediction, weight and balance control; advanced airplane systems, including fuel injection, high performance power plants, environmental systems, complex aircraft systems, and commercial flight maneuvers. Training includes instruction necessary to complete the airmen knowledge requirements for the (FAA written exam) Commercial Pilot Airplane airmen knowledge test (written exam). Prerequisites: AVSC 152, AVSC 153, AVSC 161 and AVSC 253. Lab Fee $350.

AVSC 252 Commercial Pilot Flight I Credit 2

This course is actual flight and simulator time for private pilots to learn commercial pilot operations. Emphasis is on advanced cross-country and night operations. Upon successful of this course the student will have mastered the VFR cross-country and night aeronautical knowledge and skill requirements for an FAA Commercial Pilot Certificate. A Flight Lab fee is charged for this course. This fee may change from year to year depending on flight training cost adjustments. As of the Fall 2014 semester, this fee is $5,500. Consult the Aviation Sciences Student Handbook for updated fees. Prerequisite: Departmental permission required. Co-requisite: AVSC 251.

AVSC 253 Commercial Pilot Flight II Credit 2

This course is actual flight and simulator time for private pilots to learn commercial pilot operations. Emphasis is placed on more advanced aerodynamics, aircraft performance, and practical experience to pilot a complex aircraft. Upon successful completion of this course the student will have mastered the complex aircraft aeronautical knowledge and skill requirements for an FAA Commercial Pilot Certificate. A Flight Lab Fee is charged for this course. This fee may change from year to year depending on flight training cost adjustments. As of the Fall 2014 semester, this fee is $5500.00. Consult the Aviation Sciences Student Handbook for updated fees. Prerequisite: AVSC 251 and AVSC 252. Departmental Permission is required.

AVSC 254 Commercial Pilot Flight III Credit 2

This course is actual flight and simulator time for private pilots to learn commercial pilot operations. Emphasis is on commercial flight maneuvers and practical experience to master the aircraft. Upon completion of this course, the student will have mastered the complex aircraft aeronautical knowledge and skill requirements for an FAA Commercial Pilot Certificate. A Flight Lab Fee is charged for this course. This fee may change from year to year depending on flight training cost adjustments. As of the Fall 2014 semester, this fee is $5500.00. Consult the Aviation Sciences Student Handbook for updated fees. Prerequisite: AVSC 251 and AVSC 253. Departmental Permission is required.

AVSC 261/Online Aviation Organization and Leadership Credit 3

This course is a study of the various organizational theories as they apply to the aviation industry. The course will cover the topics of human resources management, labor relations, classical and rational theories of organizational structure and management, the evolution of business organization, and the economics of organizations. Prerequisites: AVSC 231.

AVSC 298 Aerospace Design I: Gateway to Space Credit 3

The lectures will cover an introduction to space science and spacecraft functionality. The project effort will be organized by the professor, who will act as a Principal Investigator. The class will be divided in teams and asked to design, develop, test and operate a payload or a pico-satellite in response to a Request For Proposal (RFP) for a tailored mission. The project may be a payload for a BalloonSat or Sounding Rocket launch, or

the students may be asked to develop a pico-satellite and enter in the "NearSat competition" organized by AIAA and AAS.

AVSC 301 Aircraft Dispatcher Credit 3

This is a preparatory course for the FAA Aircraft Dispatcher written examinations. The course is a review of the aviation core concepts and technology as they apply to the Aircraft Dispatcher. Prerequisites: AVSC 152, AVSC 201, AVSC 202, AVSC 241, and either AVSC 251 or AVSC 112 and permission of the instructor.

AVSC 302 Advanced Aircraft Systems Credit 3

This course covers all aircraft systems, their theory of design, operations, trouble shooting and maintenance standards. Study includes propulsion systems, associated instruments, auxiliary systems, propeller and control; aircraft structure, aircraft electrical and lighting, hydraulic and pneumatic systems, avionics, brakes and tires, deicing, flight instrumentation, navigation systems, and ELT. This course covers an in-depth understanding of a typical turboprop commuter-type aircraft as well as an overview of the design and development process of commercial aircraft. Prerequisite: AVSC112 and AVSC 251 or permission of instructor.

AVSC 305 Aviation Career Preparation Credit 1

This course is designed to prepare Aviation Science students for entry into the aviation career field. Topics and assignments will include resume writing, course portfolio creation, and development of interview skills through the use of mock interviews. This course will prepare students to enter an Internship and complete AVSC 380. Prerequisite: Junior Standing

AVSC 310 Aerial Operations in Remote Sensing Credit 3

This course covers the operation of aerial platforms as it relates to remote sensing in support of various scientific endeavors. Topics discussed will include the operation of unmanned aerial systems (UAS), the collection of data using UAS and other aerial platforms, and data analysis using geographic information systems (GIS) and other relevant software tools. Students will engage in a research project, and collect and analyze data in accordance with the objectives of the project. Prerequisite: AVSC 390 or MATH 210 or permission of instructor.

AVSC 311 Aerodynamics & Aircraft Performance Credit 3

Students in this course study the fundamentals and more advanced theory of flight, the standard atmosphere, and subsonic and supersonic aerodynamics. Topics include airfoils, the complete aircraft, various aerodynamic shapes, wind tunnels, elements of airplane performances, principles of stability and control, and propeller and jet propulsion. Prerequisite: AVSC 112, MATH 112 or BUAD 252, PHYS 121 or PHYS 161 or PHYS 181, and Junior standing.

AVSC 312 Advanced Aerodynamics and Performance of Flight Vehicles Credit 3

This course is designed for Junior or Senior students who have interest in pursuing in-depth studies of aircraft performance, including stability, sonic and hypersonic propulsion, and an introduction into space mechanics and reentry techniques. Prerequisite: AVSC 311.

AVSC 323 Sport Pilot Ground School Credit 1

This course is provides the requisite aeronautical knowledge to successfully pass the Federal Aviation Administration Sport Pilot Certificate Written Exam. Students will cover topics including aircraft design and basic aerodynamics, flight Instruments, Federal Aviation Regulations (FARs), meteorology, ground operations, flight planning and navigation techniques, and required endorsements.

AVSC 326 Air Traffic Control Operations I Credit 3

This course provides the requisite aeronautical knowledge to successfully pass the Federal Aviation Administration Air Traffic Selection Training Aptitude Test Written Exam. Students will cover topics including the aircraft separation, NOTAMS, radar, FAA Orders, LOAs, regulations, navigation, publications, IFR structure, weather, PIREPS, communications, ATC clearances and strip marking as it relates to Air Traffic Controller duties. Students will practice hands on air traffic control procedures utilizing desk-top and/or an ATC simulator. Prerequisites: AVSC 202. Laboratory fee: $250.

AVSC 331 Aviation Law Credit 3

This course is a study of the foreign and domestic legal system (federal, state, and local laws and regulations) concerning air transportation and implications as they relate to operations, contracts, insurance, liability, and regulatory status, in the field of aviation. Emphasis is on domestic and international legal aspects of air transportation. Prerequisites: AVSC 112, AVSC 131 and junior standing.

AVSC 342 Flight Physiology Credit 3

This course provides an understanding and overview of physiological situations that can interfere with safety. Topics include high altitude physiology, gas laws, human anatomy, hypoxia, fatigue, jet lag, stress, drugs, alcohol, spatial disorientation, vision, and the associated human factor issues. Prerequisite: AVSC 241 and junior standing.

AVSC 355 Airport Planning Credit 3

This course provides a step by step process of airport design, layout, construction and all planning aspects of a medium hub-sized commercial airport. The student is provided with the knowledge of zoning laws, environment considerations, blueprint design, etc. The student will design and complete his/her own airport layout. Prerequisites: AVSC 131 and AVSC 231 or permission of instructor.

AVSC 361 Communication Electronics Credit 3

This course introduces the fundamentals of communication electronics. Topics introduced include signal, noise, FM/AM modulation, digital modulation, FSK, transmitting and receiving circuits, antenna, wave propagation, microwave devices, transmission lines, wave guides, radar systems, fiber optics, and practical applications. Prerequisites: PHYS122, MATH112, ENGE 170 and junior standing.

AVSC 365 Transportation Security Credit 3

This course will focus on Transportation Security Administration regulations covering aviation, railroad, highway, marine, and pipeline transportation. Requirements for all modes of transportation will be covered, with emphasis on aviation security. Personnel and the technology needed to provide a safe and secure environment for airports and airlines will be discussed. Advanced security technology and its use to significantly increase the level of security in transportation will be covered. Prerequisite: Junior standing.

AVSC 380 Cooperative or Internship Credit 1-3

Students are provided a cooperative or internship in the public or private sector to give the student an opportunity to gain experience and professional skills in an area related to aviation. Prerequisite: AVSC 305, junior standing.

AVSC 381 Cooperative or Internship II Credit 1-3

Students are provided a cooperative or internship in the public or private sector to give the student an opportunity to gain experience and professional skills in an area related to aviation. Prerequisite: AVSC 305, junior standing.

AVSC 382 Cooperative or Internship III Credit 1-3

Students are provided a cooperative or internship in the public or private sector to give the student an opportunity to gain experience and professional skills in an area related to aviation. Prerequisites: AVSC 305, junior standing.

AVSC 390 Aviation Applications of Statistics and Research Design Credit 3

This course is an introductory statistics and research design course designed for Aviation Sciences students. Special emphasis will be made on the use of data and statistical analysis in operations research. Topics to be covered include: descriptive statistics; populations and samples; measures of central tendency and dispersion; elementary probability; distributions; random variables; hypothesis testing; estimation of population means and confidence intervals; Chi square distribution; correlation coefficient; problem definition and statement; literature review; research planning; and ethical issues in research. Prerequisites: MATH 102 or 109, junior standing.

AVSC 398 Aviation Studies Abroad Credit 3

This course will examine the historical, economic, and political events that shaped the National Airspace System of foreign nations. The goal of the course will be to understand

the differences between U.S. operations domestically as compared to abroad. Students will study current trends in international aviation policy by examining foreign Civil Aviation Authority's regulations and discussing their impact on future operations worldwide. Students will study under a host institution as approved by the department. Fees: Will vary on the host site location. Prerequisite: Departmental approval.

AVSC 421 Aviation Psychology Credit 3

This course is designed to introduce students to human factors and crew resource management theory in aviation that relate to diverse areas such as engineering, psychology, physiology, aerospace safety and flight training. Special attention will be paid to the flight crew ergonomics, technology integration, human performance, pilot selection and training. Prerequisite: PSYC 100 or equivalent, AVSC 241 and junior status.

AVSC 431 Maintenance Management Credit 3

The aviation industries are concerned about the design and operation of maintenance control systems. The ratio of maintenance craftsmen to operators is higher than traditional industry standards. This fact leads to the realization that the effective management of production resources would yield more benefits to the organization. The emphasis of this course is placed on computer information systems. Seniors or juniors will demonstrate the knowledge needed to set up and maintain a maintenance program. Prerequisite: Junior standing.

AVSC 432 Airline Management II Credit 3

This course is a study of the business practices, operations, and management principles used by domestic and international airlines. The following topics are discussed: regional airlines, fleet planning, customer services, routing the efficient flow of air traffic, domestic and foreign airline competition, and fare structuring. Prerequisite: AVSC 261 or permission of instructor.

AVSC 441/Online Human Factors In Aviation Credit 3

Human factors, an interdisciplinary subject, is an empirical science that deals with human capabilities and behavior as applied to a given system. Technical disciplines contributing to human factors are anthropometry, biomechanics, engineering, mathematics, and psychology. This course is a study of the interface and relationship between humans and machines in the aviation environment. The outcome adjusts the things or ways people use them and the environment for a better match of capabilities, limits, or needs. Human factors in aviation is designed to bridge the gap between theory and practical application in aviation. The course material will include: performance, design, human senses, information processing, workload, group interaction, fatigue, errors, memory allocation and introduction to controls and displays. Prerequisite: AVSC 421.

AVSC 442 Safety Management Credit 3

This course is a design course. Students will design their own safety plan for the company of the student's choice. The course covers safety quantification, laws, regulations and

policies. Topics include: OSHA, cost analysis, hazardous conditions, failure models, risk analysis, and performance measurements. Prerequisite: AVSC 241 and junior status.

AVSC 451 Certified Flight Instructor Airplane - Ground Credit 3

This course provides ground instruction required by the FAA for the student to become a FAA certified flight instructor. This course includes fundamentals of instruction, including responsibilities and requirements for instruction of private and commercial airplane flight students. Training includes instruction necessary to complete the airmen knowledge requirements (FAA written exam) for Fundamentals of Instruction and Certified Flight Instructor-Airplane. Prerequisite: AVSC 163, AVSC 251. Lab Fee $350.

AVSC 452 Certified Flight Instructor Airplane - Flight Credit 2

Flight instruction required by the FAA for the student to become a FAA certified fight instructor is the focus of this course. The course includes: fundamentals of instruction; technical subject areas; preflight preparation; preflight lessons on a maneuver to be performed in flight; preflight procedures; airport and seaplane base operations; takeoffs, landings, and go-arounds; fundamentals of flight; performance maneuvers; ground reference maneuvers; slow flight, stalls and spins; basic instrument maneuvers; emergency operations; and post flight procedures. Successful completion of this course includes passing the FAA practical test for Certified Flight Instructor-Airplane. A Flight Lab Fee is charged for this course. This fee may change from year to year depending on flight training cost adjustments. As of the Fall 2014 semester, this fee is $3000.00. Consult the Aviation Sciences Student Handbook for updated fees. Prerequisite: AVSC 254, AVSC 311. Departmental permission is required. Co-requisite: AVSC 451.

AVSC 461 Certified Flight Instructor - Instrument (Ground) Credit 2

This course provides ground instruction and practice teaching dealing with flight operations pertinent to training students in the instrument flight environment. Training includes instruction necessary to complete the airmen knowledge requirements (FAA written exam) for the Certified Flight Instructor-Instrument (Airplane) rating, and simulator console instructor. Prerequisites: AVSC 451 and junior standing. Lab Fee $350.

AVSC 462 Certified Flight Instructor - Instrument (Flight) Credit 1

Flight instruction and practice teaching dealing with flight operations pertinent to training students in the instrument flight environment are provided in this course. Training includes instruction necessary to complete the aeronautical skill and experience requirements for the practical test for a FAA Certified Flight Instructor-Instrument (Airplane) certificate. A Flight Lab Fee is charged for this course. This fee may change from year to year depending on flight training cost adjustments. As of the Fall 2014 semester, this fee is $2500.00. Consult the Aviation Sciences Student Handbook for updated fees: Prerequisite: AVSC 452 and junior standing. Departmental permission is required. Co-requisite: AVSC 461.

AVSC 472 Multi-Engine Pilot Flight Credit 1

Students receive flight instruction necessary to provide the aeronautical skill and knowledge to meet the requirements for the addition of the multi-engine land class rating with instrument privileges. A Flight Lab Fee is charged for this course. This fee may change from year to year depending on flight training cost adjustments. As of the Fall 2014 semester, this fee is $2500.00.. Prerequisite: AVSC 254. Departmental Permission is required.

AVSC 475 Aviation Operations Research and Decision Theory Credit 3

This course covers the topics of operations research, analysis and decision theory as it applies to the field of aviation. Students will gain experience with a suite of operations analysis software currently being used in the industry. Topics to be covered include queuing theory, mathematical models, data sources, and practical application of data. Prerequisite: AVSC 170.

AVSC 485 Advanced Concepts in Geographical Information Systems Credit 3

This is an advanced course for students who have taken one or more courses in geographic information systems (GIS). Emphasis will be on emergent technologies and applications relevant to aviation. An integral component of this course will be field work and the collection and analysis of data by students. Prerequisite: AGNR 483 or AVSC 170 or permission of instructor.

AVSC 490 Senior Capstone Course in Aviation Credit 3

This is the capstone course for all Aviation Science students. The capstone course is a partial requirement for graduation with a degree in Aviation Sciences. The course is a project or design or course in an area of mutual interest to the student and faculty advisor and includes a comprehensive examination in the core aviation studies. Prerequisite: Senior standing.

AVSC 498 Aerospace Design II Credit 3

The course involves a senior design project organized by the professor, who will act as Principal Investigator. Students will be asked to design, develop, test, and operate a, aerospace/aviation payload for a tailored mission. Students will be required to present their design and discuss various design elements that contributed to the overall project. Students will create a detailed project report including a summary of the design project. Prerequisites: AVSC 298 and senior standing.

AVSC 499 Senior Seminar Credit 3

In this senior seminar course, topics vary from year to year. The purpose of this course is to expose seniors to developing concepts and technology in aviation or aerospace. Prerequisite: Senior standing.

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

At the UMES, A minimum of 40 credits is required for General Education Requirements. All students are expected to complete a common body of academic course work. The General Education Requirements are designed to promote the development of a comprehensive educational base that will effectively support a student's choice of a major concentration. Deviations from the General Education Requirements may occur in certain areas owing to specific requirements of the major. Therefore, students should consult with their freshman or departmental advisors when making course selections.

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

The Professional Pilot concentration of the Aviation Science program will comply with all requirements of the FAA part 141 ground and flight schools. Also, the Aviation Science will pursue accreditation from the Aviation Accreditation Board International (AABI). The Aviation Accreditation Board International AABI is a specialized/programmatic accreditor recognized by the Council for Higher Education Accreditation (CHEA).

6. 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 to provide academic instruction in the program.

7. 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 s ystem,
availability of academic support services and financial aid resources, and costs and payment policies.

As with all other academic programs offered by the University of Maryland Eastern Shore, 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.

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

As with all other academic programs offered by the University of Maryland Eastern Shore, the proposed program will provide ensure that advertising, recruiting, and admissions materials will clearly and accurately represent the proposed program and the services available.

H. Adequacy of Articulation

1. If applicable, discuss how the program supports articulation with programs at partner institutions. Provide all relevant articulation agreements.

As stated earlier, UMES has a long-standing partnership that exists with the Community College of Baltimore County (CCBC), which offers 2-year associates degrees in Aviation. Also, a dual-enrollment agreement is currently under development with Duvall High School in Prince George's County, Maryland, in which high school students in the Aerospace program at Duvall would take and receive college credits for courses at UMES. Also, the Aviation Science program is currently developing articulation agreements with the assistance of the Maryland State Department of Education (MSDE) for Colonel Zadok Magruder High School. Also, the University is working with the District of Columbia Public Schools (DCPS) so high school students who pursue Aviation related programs can receive college credits for courses at UMES.

I. Adequacy of Faculty Resources (as outlined in COMAR 13B.02.03.11).

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

   There are currently four full-time faculty qualified to teach Aviation courses in the Aviation Science program. These faculty are listed below:

   Edward J. Brink III, M.S., CFI is a Flight Program Specialist and Lecturer in the Aviation Sciences program. Edward Brink has a significant background in Aeronautics; to include specialty areas of Aviation Maintenance (Mechanic), Aviation Maintenance Management & Engineering, Continued Analysis and Surveillance System (CASS), Flight, and Aviation Safety Risk Management. Mr. Brink has a Bachelor's of Science in Aviation Science with a Professional Pilot concentration from UMES as well as a Master's in Aeronautics from Embry-Riddle with specializations in Space Operations Management as well as Airport Operations Management. Currently, he holds a commercial single and multiengine land instrument airplane pilot certification as well as a flight instructor single and multiengine land instrument airplane rating.

   Edward's 21-year background in Aeronautics began at the age of 17 with entry into the United States' Navy where he was a Structural and Hydraulic Mechanic on the E2-C and C2-A Hawkeye/Greyhound on the USS George Washington. After his time in the Navy, Edward joined UMES as a student where he became a commercial pilot and flight instructor, which paved the path for his 10-year employment at Piedmont Airlines. At Piedmont, he specialized in Aviation Engineering for maintenance repairs and tracking as well as management for continuous improvement and safety risk management of the entire maintenance program. Mr. Brink joined UMES in 2016 as the Program Flight Specialist and was instrumental in restructuring the Flight Program at UMES with his colleagues. Since Mr. Brink's time with UMES, the program has grown, in-house flight training began and received highly sought licensing minimum reductions such as restricted ATP and 141 ground school approvals. Mr. Brink has also been instrumental in leading several summer STEM camp programs.

Willie Brown is an Assistant Professor in the Department of Engineering and Aviation Sciences. He received his M.S. in Software Engineering from Embry-Riddle Aeronautical University, Daytona Beach, Florida and a Ph.D. specializing in homeland security. He also received dual degrees both from Elizabeth City State University, Elizabeth City, North Carolina, Bachelor of Science, in Aviation Science, and Bachelor of Science, in Computer Science. Also, he has completed the Management Development Program at Harvard University and the Leadership Management Program at the Federal Emergency Management Agency. Before coming to the University of Maryland Eastern Shore, he was a Lecturer in the Aviation Science Program at Elizabeth City State University and served in various capacities for the Office of Naval Research and the North Carolina Department of Transportation, Division of Aviation. He served as the Vice President of Administration of the Eastern North Carolina Institute of Electrical and Electronics Engineers (IEEE) for Geoscience and Remote Sensing Society. He has authored and co-authored publications for both national and international peer-reviewed journals with conference proceedings involving aviation education.

Chris Hartman is an Assistant Professor in the Department of Engineering and Aviation Sciences and the Coordinator of the Aviation Science program. He received his M.S. in Aeronautical Science from Embry-Riddle Aeronautical University, Daytona Beach, Florida and currently is a Ph.D. candidate at the University of Maryland Eastern Shore in the Food Science and Technology program. He also received a Bachelor's degree in Aviation Science from UMES. He is a Federal Aviation Administration (FAA) certified Commercial Pilot and Flight Instructor. He currently teaches in aviation science and researches in the field of remote sensing and the use of Unmanned Aerial Systems (UAS) in support of precision agriculture and environmental science. He has authored and co-authored publications for both national and international peer-reviewed journals with conference proceedings involving aviation education and precision agriculture.

Xavier Henry is a Lecturer in the Department of Engineering and Aviation Sciences. He received his B.S. in Aviation Science from the University of Maryland Eastern Shore, his M.S. In Food and Agricultural Science from the University of Maryland Eastern Shore and his Ph.D. from the University of Maryland Eastern Shore in Food Science and Technology. He is a Federal Aviation Administration (FAA) certified Private pilot, holds an Instrument Rating and is a Basic Ground Instructor. His graduate research involved the use of aerial imagery and remote sensing for environmental science. He currently teaches in aviation science and researches in the field of remote sensing and the use of Unmanned Aerial Systems (UAS) in support of precision agriculture and environmental science. He has authored and co-authored publications for both national and international peer-reviewed journals with conference proceedings involving aviation education and precision agriculture.

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 faculty of the proposed program meets the rigorous standards stipulated by ABI, FAA Part 141, Middle States Association of Colleges and Schools, and the University of Maryland Eastern

Shore and in each case have been trained to 1) have the requisite body of knowledge to teach in the proposed program and 2) have met or will meet the requirements to obtain tenure at UMES.

UMES provides training in pedagogy for faculty through the following initiatives:

- Annual Innovations in Teaching and Learning Conference in June, which is free to UMES faculty and involves faculty from across the region. The conference includes strands such as Assessment, Online Learning, Diversity and the Inclusive Classroom, Teaching with Technology, and Innovative Pedagogy.

- Center for Instructional Technology and Online Learning (CITOL) offers regular seminars in the use of a variety of technology tools and platforms to enhance teaching.

- Faculty Reading Circles: The Provost's office offers faculty reading circles focused on enhancing teaching skills. The Provost's office purchases the books for faculty, and faculty meet weekly to discuss the books during a specific time frame.

- Faculty are encouraged to apply to university funds offering stipends to attend professional development activities.

UMES faculty are required through annual performance evaluation to attend seminars, workshops and conferences to maintain their knowledge of current pedagogical practices. The faculty involved in the PGCC location will also be required to attend these types of seminars, workshops and conferences on pedagogy and instructional best practices.

b) The learning management system

UMES has a Center for Instructional Technology & Online Learning (CITOL) which is committed to training faculty on Blackboard (Bb) Learning Management System (LMS) and other instructional technologies. The center offers multiple workshops every week, mostly for Blackboard and also includes both Quality Matters and ECHO360 Lecture capture. The workshops delivered have evidence which shows they improve student learning and retention. Instructors teaching Online and Hybrid courses are specifically required to complete an 8 module "UMES Online Teaching Certification Course". This online and self-paced course not only teaches them the tools they need but also teaches them the pedagogy of teaching online. This project-based course requires the instructors to achieve 85% or better on each assignment to have successfully passed and then move on to the next module. As previously mentioned, CITOL offers faculty development workshops and supports the use of the latest instructional pedagogy for distance learning including the use of the following LMS tools: Blackboard Learn, Blackboard Mobile, Blackboard Collaborate, Respondus, Respondus LockDown Browser, Respondus Monitor, Responds StudyMate Author, Echo360, Camtasia, and, iSpring Suite.

d) Evidenced-based best practices for distance education, if distance education is offered.

To assure that fully online courses delivered are of high quality, the UMES Vice President of Academic Affairs and the Center for Instructional Technology & Online Learning have developed a set of guidelines and requirements. All online courses must be approved by the Online Course Review Committee as pedagogically sound before being considered as a fully online course by the University. All instructors developing a fully-online course for the first time must meet with a

representative of the Center for Instructional Technology and Online Learning for consultation. The consultation and, if necessary, follow up sessions may include training, curriculum development assistance, and/or technical support. To ensure that faculty are well prepared to use the Blackboard Learning Management System, all faculty users are required to take training for which they will receive a certificate. Training includes technology, online learning pedagogy, and comprehension of the Quality Matters Rubric.

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.

The Frederick Douglass Library, located in the university Academic Oval serves as the campus nucleus for information in multiple formats to support the mission and academic programs offered at the University of Maryland Eastern Shore. The Aviation Program collections are a part of the core collection of the library's holdings. The Aviation Program electronic collection has accessibility to over 100 online databases which are selected to complement the academic subjects taught at UMES. There are online journals and e-books available to meet the research needs of the students and faculty. Faculty librarians serve as liaisons to assigned academic disciplines. Liaisons collaborate with academic departments to enhance collection development with print and electronic books and journals. Faculty librarians provide library instruction sessions in library orientation and information literacy to support the research needs of students, faculty, and staff. Library instruction sessions can range from one- on- one instruction to classroom instruction and from basic library orientation to advanced research subject assistance. Borrowing from other libraries through Inter-Library Loan and Inter-Campus Loan are services available when the Frederick Douglass Library does not have the resources its collection. Inter-Library loans allow patrons to borrow items from any library that utilize this service. Inter-Campus loans allow patrons to borrow items from campuses within the University of Maryland System Libraries.

The library is physically open 90.5 hours per week with 24/7 access to USMAI library collections and electronic resources. There is also a global 24/7 AskUsNow! Chat service where patrons will receive research assistance from librarians within the state of Maryland, another state or country. UMES Librarians are available to assist students remotely and the library maintains an extensive website to take visitors through all its services and materials. Students can have needed items delivered directly to PGCC from UMES or any other library in the University System of Maryland.

PGCC's Library & Learning Resources include the Marlboro English Learning Center, The Mathematics Learning Center, a Tutoring Center, and a Writing Center. The Marlboro English Learning Lab is a computer lab dedicated to serving all students taking English (EGL) courses at Prince George's Community College. The Tutoring Center at PGCC provides instructional support to all students. Services include individual tutoring by appointment, walk-in assistance (when a tutor is available), guided small-group study sessions, and assistance for related computer software. PGCC's Writing Center offers tutoring for all students who are working on any writing assignment in any course. Faculty tutors work with students one-on-one on all phases of the writing process. Finally, PGCC has a librarian onsite during library hours to assist with questions or requests.

K. Adequacy of Physical Facilities, Infrastructure and Instructional Equipment (as outlined in COMAR

13B.02.03.13)

1. Provide an assurance that 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.

The physical facilities, infrastructure, and instruction equipment at Prince George's Community College 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.

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, and

The University has a robust institutional electronic mailing system which is maintained by the Chief Information Officer overseeing the Departments of Administrative Computing and Information Technology.

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

The CITOL at UMES, https://www.umes.edu/CITOL/, assists faculty and students in all aspects of e-learning. This includes Blackboard, Collaborate, Respondus, and Echo360. The Center resources will be key to assisting the department in developing any on-line courses for the Aviation Science program. The CITOL has strict guidelines and requirements for online course requests, fully online course development, student and teacher expectations for fully online courses, and fully online instructor requirements. UMES participates in "The State Authorization Reciprocity Agreement."

L. Adequacy of Financial Resources with Documentation (as outlined in COMAR 13B.02.03.14)

1. Complete **Table 1: Resources and Narrative Rationale**. Provide finance data for the first five years of program implementation. Enter figures into each cell and provide a total for each year. Also provide a narrative rationale for each resource category. If resources have been or will be reallocated to support the proposed program, briefly discuss the sources of those funds.

TABLE 1: PROGRAM RESOURCES					
Resource Categories	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
1.Reallocated Funds	$0.00	$0.00	$0.00	$0.00	$0.00
2.Tuition/Fee Revenue (c + g below)	$105,740.00	$211,480.00	$360,010.00	$485,910.00	$611,810.00
a.Number of F/T Students	10	20	35	45	55
b.Annual Tuition/Fee Rate	$8,558.00	$8,558.00	$8,558.00	$8,558.00	$8,558.00
c.Total F/T Revenue (a x b)	$85,580.00	$171,160.00	$299,530.00	$385,110.00	$470,690.00
d.Number of P/T Students	5	10	15	25	35
e.Credit Hour Rate	$224.00	$224.00	$224.00	$224.00	$224.00
f.Annual Credit Hour Rate	18	18	18	18	18
g.Total P/T Revenue (d x e x f)	$20,160.00	$40,320.00	$60,480.00	$100,800.00	$141,120.00
3.Grants, Contracts & Other External Sources	$0.00	$0.00	$0.00	$0.00	$0.00
4.Other Sources	$0.00	$0.00	$0.00	$0.00	$0.00
TOTAL (Add 1 – 4)	**$105,740.00**	**$211,480.00**	**$360,010.00**	**$485,910.00**	**$611,810.00**

Budget Notes:

1. Reallocated Funds

   - University funds will not be reallocated for this program. Program support will come from new funds.

2. Tuition and Fee Revenue

   - A full-time in-state tuition/fee rate of $8,558 per year was used to calculate the revenue for all full-time students enrolled in the program. A part-time in-state tuition rate of $224 was used assuming part-time a student enrolls in18 credits per year.

3. Grants and Contracts

   - No grants and/or contracts will be used to fund the proposed program.

4. Other Sources

   - No other sources will be used to fund the proposed program.

5. Total Year

   - For year 1, the program will generate revenue of $105,740, year 2: $211,480, year 3: $360,010, year 4: $485,910, and year 5: $611,810. Starting in year 4, revenue will exceed expenses.

2. Complete **Table 2: Program Expenditures and Narrative Rationale**. Provide finance data for the first five years of program implementation. Enter figures into each cell and provide a total for each year. Also provide a narrative rationale for each expenditure category.

TABLE 2: PROGRAM EXPENDITURES:					
Expenditure Categories	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
1.Faculty (b + c below)	$241,800.00	$241,800.00	$241,800.00	$241,800.00	$241,800.00
a.Number of FTE	3	3	3	3	3
b.Total Salary	$ 189,000.00	$ 189,000.00	$ 189,000.00	$ 189,000.00	$ 189,000.00
c.Total Benefits	$52,800.00	$52,800.00	$52,800.00	$52,800.00	$52,800.00
2.Admin. Staff (b + c below)	$132,000.00	$132,000.00	$132,000.00	$132,000.00	$132,000.00
a.Number of FTE	1	1	1	1	1
b.Total Salary	$100,000.00	$100,000.00	$100,000.00	$100,000.00	$100,000.00
c.Total Benefits	$32,000.00	$32,000.00	$32,000.00	$32,000.00	$32,000.00
3.Support Staff (b + c below)	$66,000.00	$66,000.00	$66,000.00	$66,000.00	$66,000.00
a.Number of FTE	1	1	1	1	1
b.Total Salary	$50,000.00	$50,000.00	$50,000.00	$50,000.00	$50,000.00
c.Total Benefits	$16,000.00	$16,000.00	$16,000.00	$16,000.00	$16,000.00
4.Technical Support and Equipment	$399,500.00	$0.00	$0.00	$0.00	$0.00
5.Library	$0.00	$0.00	$0.00	$0.00	$0.00
6.New or Renovated Space	$0.00	$0.00	$0.00	$0.00	$0.00
7.Other Expenses	$26,000.00	$26,000.00	$26,000.00	$26,000.00	$26,000.00
TOTAL (Add 1 – 7)	**$865,300.00**	**$465,800.00**	**$465,800.00**	**$465,800.00**	**$465,800.00**

Budget Notes:

1. Faculty
   - One (1) full time 9-month tenure-track faculty is required to teach aviation science courses, including flight training courses. Tenure track faculty salaries are $75,000 per year with 32% fringe benefits
   - One (1) full time tenure track faculty with appropriate qualifications will have a joint appointment as the Chief Flight Instructor. This person will provide oversight of the FAA 141 flight school and other flight instruction related duties. Salary is $90,000 plus 32% fringe benefits.
   - Adjunct faculty are paid at the rate of $4,000 per course (6 course per year is anticipated)

2. Administrative Staff
   - One (1) full-time 12-month Program Director @ PGCC will be hired to promote the program at PGCC, meet prospective students, assist students with enrollment and course selection, develop industry relationships and recruit. The Program Director's salary would be $75,000 plus 32% fringe benefits.

3. Support Staff
    - One (1) full-time administrative assistant @ PGCC will be required for course scheduling, student record keeping and documentation. The salary is $50,000, plus 32% fringe benefits.

4. Equipment
    - Computing equipment for faculty will allow technology integration into the classroom at $5,000
    - Educational Drones: $4,500
    - Flight simulation is integrated into UMES flight training. To accomplish this, a RedBird MCX flight simulator will be purchases. This simulator, with 2 aircraft configurations, delivery and installation will cost $120,000.
    - Aircraft will also be required to conduct flight training. Cost of operation will be covered by flight training fees, but initial acquisition of 3 late model trainer aircraft will cost approximately $270,000.

5. Library
    - The University provides sufficient funding to support the library's collection of Aviation materials through an on-going budgeting process. Therefore, no funds have been allocated here.

6. New/Renovated Space
    - No need for new and/or renovated space required.

7. Other Expenses
    - Advertising: $5,000 per year will be used to develop promotional materials and upgrade the website.
    - Travel: $5,000 will provide for travel between UMES and PGCC for faculty and support staff and will support Recruiter travel throughout Maryland and the Region per year.
    - Faculty Development: $3,000 for faculty professional development per year as hired.
    - Space Rental: Funding for space rental at PGCC $9,000 per year.
    - Equipment Maintenance: Funding for equipment maintenance $4,000 per year.

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 addition of the proposed new location at PGCC may assist the university with increasing its retention/persistence and graduation rates for students enrolled in the B.S. in Aviation Science program. The UMES Office of Institutional Research, Planning, and Assessment (OIRPA) provide official student achievement data. To track these measures for all academic programs and offerings, as well as by Additional Location, the Office of the Registrar assigns a unique code to all specified student population groups. Data specific to the student population group enrolled in the B.S. in Aviation Science program based at PGCC can be extracted. Each year, OIRPA provides retention and graduation metrics by the academic program.

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.

Assessment of this substantive change will be accomplished as part of the assessment of the existing B.S. in Aviation Science. This substantive change is specific to the physical location of the program offering, not in the academic substance of the program itself. Accordingly, when the accreditation of the existing B.S. in Aviation Science occurs at the UMES campus in Princess Anne, Maryland, it will carry over to the PGCC. Accreditation by the Aviation Accreditation Board International (AABI) requires identification of Program Learning Outcomes (PLOs), congruent with institutional strategy and objectives as well as documentation of an ongoing systematic process to assure that these are being met. These same Program Learning Outcomes (PLOs) and assessment procedures would extend to the program offered at PGCC.

Periodic assessment of the impact of the substantive change will be monitored as part of the institutional assessment process and include an evaluation of the PGCC location against budget and enrollment projects with primary benchmarks dictated by the parameters of the semester and academic year. Data on the PGCC location will be included in the Annual Assessment report and be used to improve the quality and relevance of educational opportunities offered by UMES at PGCC. Based upon the model employed at the USMH, BMI, and Shady Grove Additional Locations, the long-term impact of the change is projected to equal the graduate output of students based in Princess Anne as the demand for this major grows in Maryland.

N. Consistency with the State's Minority Student Achievement Goals (as outlined in COMAR 13B.02.03.05).

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

As of fall 2018, UMES had a total headcount of 3,193 students. Of this number, 2,597 students were classified as undergraduate students and 596 were graduate students. Full-time students comprised approximately 86% of our total headcount. Majority of our students identified as female (57%) and Black/African-American (63.7%). Students who identified as White made up the next largest cohort of students based on race/ethnicity at 12.5% followed by non-Hispanic, multi-racial students at 7.2%. Close to 40 different countries are represented amongst our student population. In-state students constituted the largest portion of our enrollment at 78%, followed by out-of-state students (non-international, 18%), and international students (4%). In terms of the program area, undergraduate majors in Business/Management (n=410) and the Biological Sciences (n=358) had the largest headcount. Programs in the Health Professions and Education had the largest headcount at 238 and 155 students, respectively.

If approved to add PGCC as an additional, UMES anticipates an increase in total institutional enrollment. Depending on the student demographics who pursue the Aviation Science program at PGCC, the composition of the student population at UMES could change in terms of age, race/ethnicity, and gender identity. Lastly, as stated above in the UMES mission statement, a B.S. in Aviation Science at PGCC will expand the UMES mission and institutional identity. The program

will expand educational opportunities and choices for minority and educationally disadvantaged students by offering a unique degree program in a field where there is a short of minorities and people of color in the workforce.

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.

The B.S. in Aviation Science is not directly related to an identified low productivity academic program at the University.

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.

As part of the University's efforts in distance education, the UMES Vice President of Academic Affairs and the Center for Instructional Technology & Online Learning have developed a set of guidelines and requirements. All online courses must be approved by the Online Course Review Committee as pedagogically sound before being considered as a fully online course by the University. All instructors developing a fully-online course for the first time must meet with a representative of the Center for Instructional Technology and Online Learning (CITOL) for consultation. The consultation and, if necessary, follow up sessions may include training, curriculum development assistance, and/or technical support. To ensure that faculty are well prepared to use the Blackboard Learning Management System, all faculty users are required to take training for which they will receive a certificate. Training includes technology, online learning pedagogy, and comprehension of the Quality Matters Rubric. CITOL offers faculty development workshops in the use of the latest instructional pedagogy for distance learning. In addition to a workshop on online instruction pedagogy, the center offers workshops and supports on the use of the following LMS tools: Blackboard Learn, Blackboard Mobile, Blackboard Collaborate, Respondus, Respondus LockDown Browser, Respondus Monitor, Responds StudyMate Author, Echo360, Camtasia, and, iSpring Suite.

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

The University of Maryland Eastern Shore complies with the Council of Regional Accrediting Commissions (C-RAC) guidelines and will continue to comply with C-RAC guidelines with the proposed Aviation Science additional location program at PGCC.

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PRINCE GEORGE'S
COMMUNITY COLLEGE

Dr. Charlene M. Dukes
President

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October 28, 2019

Dear President Anderson:

I am pleased that the University of Maryland Eastern Shore is pursuing collaborative activities between our institutions. Entering into such agreements offer Prince George's Community College students greater opportunities for learning, as well as preparation for careers that they might not have thought possible.

Through your plan to increase the presence of your Aviation Science program throughout the state via our system regional centers and community colleges, students will benefit from having another STEM degree option. A 2+2 agreement with community colleges such as ours is one of a number of such arrangements.

I am in support of such a partnership between UMES and PGCC. We are eager to fulfill this collaboration on behalf of our students.

Sincerely,

Charlene M. Dukes

AVIATION SCIENCE BACHELOR OF SCIENCE DEGREE PROGRAM

PROFESSIONAL PILOT CONCENTRATION

GENERAL EDUCATION REQUIREMENTS

I.	**General Education Courses**			**41 Credits**
	Curriculum Area I			**9 Credits**
	ENGL	203	Fundamentals of Contemporary Speech	3
	Arts and Humanities Course as approved by the University			3
	Arts and Humanities Course as approved by the University			3
	Curriculum Area II			**6 Credits**
	Elective Social Sciences course (SOCI 101, POLI 200, ECON 201, ECON 202)			3
	Elective Behavioral Sciences course (PSYC 200, CRJS 101, SOCI 201)			3
	Curriculum Area III			**7 Credits**
	Students must select two science courses, one of which must include a laboratory			
	Curriculum Area IV			**6 Credits**
	Students must take 6 credits of math, with at least one course at or above the level of MATH 109			
	Curriculum Area V			**9 Credits**
	ENGL	101	Basic Composition I	3
	ENGL	102	Basic Composition II	3
	ENGL	305	Technical Writing **or**	
	ENGL	310	Advanced Composition	3
	Curriculum Area VI			**4 Credits**
	AVSC	100	First Year Orientation with Aviation	1
	EXSC	111	Personalized Health Fitness **or**	
	AVSC	XXX	Aviation Course as approved by Department	3