



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

Institution Submitting Proposal

Anne Arundel Community College

*Each action below requires a separate proposal and cover sheet.*

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

Payment ☒ Yes    Payment ☐ R\*STARS #  
Submitted: ☐ No    Type: ☒ Check #0584590

Payment Amount: \$850.00    Date Submitted: 5/15/26

|                                                                                                                   |                                                                                                                               |                              |                                            |
|-------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|------------------------------|--------------------------------------------|
| Department Proposing Program                                                                                      | Biology                                                                                                                       |                              |                                            |
| Degree Level and Degree Type                                                                                      | A.S.                                                                                                                          |                              |                                            |
| Title of Proposed Program                                                                                         | Associate of Science: Science Transfer, A.S.                                                                                  |                              |                                            |
| Total Number of Credits                                                                                           | 60                                                                                                                            |                              |                                            |
| Suggested Codes                                                                                                   | HEGIS:                                                                                                                        | CIP: 40.0101                 |                                            |
| Program Modality                                                                                                  | <input checked="" type="radio"/> On-campus <input type="radio"/> Distance Education (fully online) <input type="radio"/> Both |                              |                                            |
| Program Resources                                                                                                 | <input checked="" type="radio"/> Using Existing Resources <input type="radio"/> Requiring New Resources                       |                              |                                            |
| Projected Implementation Date <small>(must be 60 days from proposal submission as per COMAR 13B.02.03.03)</small> | <input checked="" type="radio"/> Fall                                                                                         | <input type="radio"/> Spring | <input type="radio"/> Summer    Year: 2026 |
| Provide Link to Most Recent Academic Catalog                                                                      | URL: <a href="https://catalog.aacc.edu/">https://catalog.aacc.edu/</a>                                                        |                              |                                            |

Preferred Contact for this Proposal

Name: Dr. Tina Smith

Title: Associate Vice President for Learning

Phone: 410-777-2776

Email: ksmith56@aacc.edu

President/Chief Executive

Type Name: Dr. Dawn Lindsay

Signature:

Date: 5/15/2026

Date of Approval/Endorsement by Governing Board: 3/10/2026

Revised 4/2025

# ANNE ARUNDEL COMMUNITY COLLEGE

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**Dr. Dawn Lindsay**

*President*

410-777-1177

[dslindsay@aacc.edu](mailto:dslindsay@aacc.edu)

May 15, 2026

Ms. Elena Quiroz-Livanis  
Interim Secretary of Higher Education  
Maryland Higher Education Commission  
217 East Redwood Street, Suite 2100  
Baltimore, MD 21202

Dear Ms. Quiroz-Livanis:

Anne Arundel Community College is requesting approval to establish a new Associate of Science (A.S.) Science Transfer program. A separate proposal has been submitted for approval of the new Associate of Science (A.S.) Science Transfer degree. Please see the attached proposal to support this request.

The proposed new **Associate of Science (A.S.) in Science Transfer** degree is designed to support a wide range of student interests and career goals. The proposed degree offers increased flexibility, enabling students to more effectively meet transfer requirements across a broad array of science-related programs at Maryland four-year institutions. This initiative represents a strategic transition from the current **Arts and Sciences Transfer** degree, whose structure no longer fully aligns with the evolving academic and workforce needs of students. As part of this transition, the ten science-related areas of concentration currently housed within the Arts and Sciences Transfer degree will be consolidated into the new A.S. in Science Transfer, creating a more focused, coherent, and relevant academic pathway. Please see the attached proposal to support this request.

If you have any questions, please contact Dr. Tina Smith, Associate Vice President for Learning at [Ksmith56@aacc.edu](mailto:Ksmith56@aacc.edu) or (410) 777-2776.

We appreciate the Maryland Higher Education Commission's consideration of this request.

Sincerely,

A handwritten signature in black ink, appearing to read "D Lindsay", is written over a horizontal line.

Dr. Dawn Lindsay  
President

cc: Tanya Millner, Ed.D., Provost/Vice President for Learning  
Tina Smith, Ph.D., Associate Vice President for Learning  
Lance D. Bowen, Ph.D., Dean, School of Science, Technology & Education  
Kirsten Casey, Ph.D., Assistant Dean, Science  
Nanci Beier, M.A., Registrar  
Tara Carew, M.B.A., M.Ed., Director, Financial Aid

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## Associate of Science (A.S.) Science Transfer

### 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.**

Anne Arundel Community College's (AACC) Mission Statement: *"With learning as its central mission, Anne Arundel Community College responds to the needs of our diverse community by offering high quality, affordable, accessible and innovative lifelong learning opportunities."*<sup>1</sup>

The Science Department at AACC is proposing a new Associate of Science (A.S.) Science Transfer degree program designed to support a broad range of student interests and career goals. This degree offers enhanced flexibility, allowing students to meet transfer requirements for a wide variety of programs at Maryland's four-year institutions. It represents a strategic shift from the College's existing A.S. Arts and Sciences Transfer degree programs, which include structural elements that no longer align with the academic and professional needs of today's students. The science-related areas of concentration currently housed within the Arts and Sciences Transfer degrees will be streamlined and transitioned into the new A.S. Science Transfer degree program, creating a more focused and relevant academic pathway. Proposed new Areas of Concentration (AOCs), submitted to MHEC for approval under separate cover, are:

- Astronomy/Physics
- Biology
- Chemistry
- Earth Science
- Environmental Science
- Plant Science
- Premedical Professionals

By offering these concentrations, the A.S. Science Transfer degree program reflects the interdisciplinary and evolving nature of the scientific field. It ensures students are well-prepared for transfer to four-year institutions and for future careers in STEM and health disciplines.

This program directly supports AACC's mission by expanding access to high quality, affordable, and innovative educational opportunities. It also promotes equity and inclusion by providing academic pathways that are clearly defined routes that reduce barriers and allow students from varied backgrounds and academic interests to achieve their goals. Whether pursuing careers in research, healthcare, technology, or environmental advocacy, students will gain the foundational knowledge and skills necessary for success.

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<sup>1</sup> <https://www.aacc.edu/about/mission-and-vision/>

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Additionally, the program fosters interdisciplinary collaboration and critical thinking, aligning with AACC's vision of transforming lives to create an engaged and inclusive society. In summary, the A.S. Science Transfer degree program is a forward-thinking, student-centered initiative that embodies AACC's commitment to excellence, innovation, and inclusivity in higher education.

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

The A.S. Science Transfer degree program aligns with AACC's strategic plan, *AACC Forward 2030 (FY26–FY30)*<sup>2</sup>, which aims to advance the college as a dynamic, student-centered institution. The program supports *Goal 1: Be a Vibrant Resource for the Community* by creating clear academic and workforce pathways that meet regional economic needs. It fulfills *Goal 2: Provide Access for All* through affordable, flexible options that remove barriers and promote equity. To achieve *Goal 3: Ensure Academic Excellence*, the program offers evidence-based, rigorous curricula aligned with transfer and workforce requirements. By preparing students for advanced degrees and high-demand careers, *Goal 4: Driving Economic and Social Mobility*, is supported through enhanced long-term financial stability and community vitality. Finally, *Goal 5: Foster a Student-Centered Culture* is realized through targeted advising, STEM tutoring, and research opportunities that support retention and completion, ensuring a meaningful and achievable academic journey.

## **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).**

All costs of the A.S. Science Transfer degree program will be funded through AACC's annual operating budget. This program will continue to be adequately funded for the first five years of implementation and will not require additional expenditures outside of those that are offset by tuition revenue from projected enrollment. More details are provided in Section L below.

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

### **a. ongoing administrative, financial, and technical support of the proposed program**

Anne Arundel Community College is committed to the ongoing administrative, financial, and technical support for the A.S. Science Transfer degree program. This program has the necessary support at the departmental, divisional, and institutional levels to operate successfully. It will be implemented within the School of Science, Technology and Education, and the functional areas will be led by the Assistant Dean of Science, along with Directors and Academic Chairs. Current administrative staff will also provide support. Technical support, including remote, phone, and in-person modalities, will be provided by the onsite Technology

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<sup>2</sup> <https://www.aacc.edu/about/mission-and-vision/strategic-plan/>

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Service Desk, through AACC's Information and Instructional Technology (IIT) division. The College's IDEA Lab provides support and maintenance of the learning management system (LMS).

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

Anne Arundel Community College is committed to providing all students an opportunity to complete their program of study. Students may elect to graduate from a program by meeting the curriculum requirements as outlined in the catalog in effect during their initial enrollment, ensuring stability and predictability in academic planning. This commitment reflects AACC's student-centered mission and institutional policy to safeguard degree completion for all learners.

**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**

The A.S. Science Transfer degree program will significantly contribute to the advancement and evolution of knowledge in Maryland by preparing a diverse and skilled group of students for transfer into STEM-related and allied health programs at four-year institutions. Students will engage in a curriculum designed to foster critical thinking, analytical skills, and interdisciplinary collaboration. This approach ensures that graduates are well-equipped to contribute to scientific innovation, research, and problem-solving in a rapidly evolving global landscape. The program aligns with Maryland's strategic goals to strengthen its STEM and healthcare workforce.

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

As an open-enrollment institution, AACC serves as a primary access point to higher education for all students, including minority and educationally disadvantaged students in Anne Arundel County. As a low-cost option, the college is uniquely positioned to provide pathways for all students to pursue a wide variety of educational opportunities in STEM and healthcare fields. In support of its mission, AACC has built a robust ecosystem for undergraduate research experiences across the sciences. This infrastructure includes faculty-mentored research projects, interdisciplinary collaborations, and partnerships with four-year institutions. These high-impact practices provide students with meaningful, hands-on learning opportunities that deepen their understanding of scientific inquiry and enhance their academic and professional preparation.

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

The A.S. Science Transfer degree program aligns strongly with the goals and priorities outlined in the *2022 Maryland State Plan for Postsecondary Education*, particularly in the areas of Access, Success, and Innovation.<sup>3</sup>

**Access:** This program expands affordable, high-quality STEM and healthcare education to a diverse student population. As an open-enrollment institution, AACC provides clear, flexible transfer pathways through multiple concentrations helping all students, including underrepresented students, transition to Maryland’s four-year institutions. This aligns with Priority 4, which focuses on improving systems that impact equitable access.

**Success:** Designed for rigorous academic preparation and structured transfer pathways, this program integrates faculty-mentored undergraduate research to enhance engagement, confidence, and readiness for advanced study. These practices support Priorities 5 and 6, ensuring high-quality education and reducing barriers to timely completion.

**Innovation:** With a modern, adaptable curriculum, this program responds to evolving STEM workforce needs. Its emphasis on research and interdisciplinary collaboration fosters creativity and problem-solving, advancing Priority 8 by promoting a culture of innovation beyond the classroom.

### 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.

The proposed A.S. Science Transfer degree program, with concentrations in Astronomy/Physics, Biology, Chemistry, Earth Science, Environmental Science, Plant Science, and Pre-Medical Professionals, prepares students for transfer to four-year institutions. These programs are designed to help meet Maryland’s current and emerging workforce needs in STEM and health-related fields.

Potential industries include:

- **Healthcare and Life Sciences:** Includes positions such as registered nurses and medical or clinical laboratory technicians. Entry-level employment generally requires a bachelor’s degree or a specialized post-transfer credential.
- **Environmental and Earth Sciences:** Includes positions such as environmental

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<sup>3</sup> <https://mhec.maryland.gov/Pages/2021-2025-Maryland-State-Plan-for-Higher-Education.aspx>

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scientists, sustainability specialists, and climate policy analysts. Entry-level roles typically begin at the analyst or technician level and require a bachelor's degree.

- **Biological and Chemical Sciences:** Includes positions such as biological technicians, chemical technicians, and research assistants. Most entry-level roles require a bachelor's degree, with advanced positions often requiring a master's degree.
- **Physics and Astronomy:** Includes positions in aerospace, education, and data science. Typical entry-level roles include research assistants or educators following completion of a bachelor's degree.
- **Education and Science Communication:** Includes positions such as science educators or communicators in schools, museums, and industry settings. Entry-level positions generally require a bachelor's degree.<sup>4</sup>

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

According to the Maryland Department of Labor, STEM fields are expected to grow by 10-15% from 2023-2033<sup>5</sup>. This strong growth, combined with consistent job vacancies, confirms substantial educational and training needs. These labor market insights support expansion of STEM related academic programs to meet regional employment needs and align with state workforce goals. This program supports students aiming to work for some of Anne Arundel County's largest STEM and healthcare employers, including Fort George G. Meade, home to NSA and U.S. Cyber Command, Northrop Grumman, Luminis Health Anne Arundel Medical Center and University of Maryland Baltimore Washington Medical Center. Further, proximity to federal research hubs like National Institutes of Health, NASA Goddard, Johns Hopkins, and biotech clusters in Anne Arundel and Montgomery Counties help drive demand for skilled professionals in STEM.

## **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.**

Anticipated Vacancies from 2025–2030: According to the *Bureau of Labor Statistics (2024)*, 71,500 statewide openings are projected across the targeted fields. This figure confirms the need for robust transfer pathways to meet STEM and healthcare educational and training demands (see table below).

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<sup>4</sup> Maryland Department of Labor, *Maryland Long Term Occupational Projections 2023-2033*, [occupationalprojections.xlsx](#)

<sup>5</sup> *Ibid.*

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| Category                            | Key Occupations (SOC Codes)                                                                            | 5-Year Total Openings (2025–2030, Statewide) |
|-------------------------------------|--------------------------------------------------------------------------------------------------------|----------------------------------------------|
| Healthcare and Life Sciences        | Registered Nurses (29-1141), Medical Lab Technicians (29-2010), Health Education Specialists (21-1091) | 60,000                                       |
| Environmental and Earth Sciences    | Environmental Scientists (19-2041), Sustainability Specialists (19-2043 subset)                        | 2,500                                        |
| Biological and Chemical Sciences    | Biological Technicians (19-4021), Chemical Technicians (19-4031), Biochemists (19-1021)                | 4,000                                        |
| Physics and Astronomy               | Physicists/Astronomers (19-2010), Aerospace Engineers (17-2011)                                        | 1,500                                        |
| Education and Science Communication | Secondary School Teachers, Science (25-2031), Science Writers (27-3043 subset)                         | 3,500                                        |
|                                     |                                                                                                        | Total: 71,500                                |

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

Anne Arundel Community College draws from a large and stable regional pipeline anchored in Anne Arundel County Public Schools (AACPS), which serves more than 85,000 students and consistently graduates over 5,000 students each year. This pipeline is reinforced by steady population growth in Anne Arundel County. Within this context, AACC conferred 1,368 associate degrees in FY25, underscoring its central role in regional talent development. The combination of a consistent annual flow of AACPS graduates and sustained population growth demonstrates a strong and expanding supply of prospective students, validating the need for enhanced transfer pathways such as the A.S. Science Transfer degree program. The program and its proposed Areas of Concentration are expected to leverage this pipeline to increase STEM degree output by hundreds of graduates over the next five years in alignment with regional workforce demand and Maryland’s strategic goals for access, success, and innovation.

#### 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.

Anne Arundel Community College’s new A.S. Science Transfer degree program is designed to meet Maryland’s growing demand for STEM-educated graduates while addressing local student needs in Anne Arundel County. Although similar programs are offered at other community colleges in Maryland, their geographic distance limits accessibility for many students in AACC’s service area. Community college students typically rely on local institutions due to transportation constraints, employment obligations, and the need for flexible scheduling. As a result, programs located outside the immediate area do not effectively meet the needs of these students. Additionally, science programs require

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substantial in-person engagement through laboratory instruction, observational experiences, and extended classroom contact hours. These hands-on components are not easily replicated through remote or hybrid delivery and make proximity to the institution especially important for student success.

Similar programs in Maryland include:

- Carroll Community College: Offers an A.S. in Physical Sciences, with a Chemistry AOC or Geology AOC, along with an A.S. in Physics. These programs emphasize transfer preparation and foundational STEM coursework, supporting transfer preparation.
- College of Southern Maryland (CSM): Offers an A.S. in Mathematics and Sciences with concentrations in Biology, Chemistry, Mathematics, and Physics, and a separate A.S. in Physical Sciences with Chemistry and Physics concentrations. These programs focus on transfer preparation and STEM workforce alignment.
- Community College of Baltimore County (CCBC): Offers an A.S. in Science as a general transfer degree with multiple concentration options, closely resembling AACC's proposed structure in its broad, flexible approach to STEM education.
- Howard Community College (HCC): Offers an A.S. in General Studies for STEM, with pathways in Biology, Chemistry, and Environmental Science, designed for transferring to Maryland universities.
- Montgomery College (MC): Offers an A.S. in Science with concentrations in Biological Science, Chemistry and Biochemistry, Environmental Science and Policy, Mathematics, and Physics. The program emphasizes flexibility for transfer to four-year institutions.

University of Maryland, College Park (UMCP) offers a bachelor's degree in physical sciences with the same CIP code as AACC's proposed program. While there is alignment in disciplinary focus, AACC's proposed A.S. Science Transfer degree serves a distinct and complementary role as a lower-division, transfer-oriented program. It is designed to provide foundational coursework, general education, and structured pathways that prepare students to enter programs such as UMCP as juniors. The proposed program does not duplicate UMCP's offering but instead supports it by creating a local, affordable access point and strengthening the transfer pipeline into four-year physical sciences degrees.

Differences in programs include:

- Broader Range of Concentrations: AACC's A.S. Science Transfer degree program will ultimately offer a wider array of concentrations (7 concentrations once approved by MHEC) compared to MC (5 concentrations), CSM (5 concentrations across two programs), and CCBC's more generalized structure. This breadth reflects AACC's historical expertise in science since its founding in 1961 and responds to local demand in Anne Arundel County, where about 1,000 of 2,500 Transfer Studies students pursue

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science-related goals.<sup>6</sup>

- **Emphasis on Undergraduate Research:** AACC's program integrates a robust undergraduate research ecosystem, a distinguishing feature not emphasized in peer programs.
- **Strategic Split from Arts and Sciences:** AACC's program is a strategic restructuring of its Arts and Sciences Transfer degree to create a focused, modern STEM curriculum. The current Arts and Sciences degree's rigid concentration requirements (e.g., specific humanities or wellness courses) result in approximately 150 annual petitions for substitutions, with about 70% of these petitions being from STEM students needing adjustments due to transfer needs.<sup>7</sup> The A.S. Science Transfer degree program, with consolidated concentrations, will retain the 34–36 general education credits, while removing restrictive electives.

The A.S. Science Transfer degree program is not unnecessarily duplicative due to its tailored response to AACC's student demographics, institutional capacity, and regional workforce needs. This addresses the misalignment of hundreds of students in current Transfer Studies programs pursuing STEM goals, improves cohort tracking for evaluation, and reduces administrative burdens from petitions. Its broader concentrations and research focus distinguish it from peer programs, while articulation agreements with Historically Black Institutions (HBIs) and other Maryland institutions ensure efficient transfer pathways. By consolidating and modernizing STEM education, AACC's program enhances access and outcomes for diverse students, aligning with Maryland's STEM workforce needs.

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

The A.S. Science Transfer degree program at AACC, with proposed AOCs in Astronomy/Physics, Biology, Chemistry, Earth Sciences, Environmental Sciences, Plant Science, and Pre-Medical Professionals, is a strategic response to student demand, institutional data, and Maryland's workforce and educational priorities. The program consolidates science-focused pathways currently distributed across the Transfer Studies and Arts and Sciences degrees into a cohesive, discipline-aligned structure that improves transfer preparation, student outcomes, and program oversight.

Transfer Studies is AACC's largest academic pathway, enrolling approximately 2,500 students in 2024 (about 30% of total enrollment). Institutional advising and petition data indicate that roughly 40% of these students ultimately pursue science-related transfer goals but are enrolled in general programs due to limited discipline-specific options. The A.S. Science Transfer degree consolidates these pathways, allowing AACC to track and support cohorts of hundreds of students and strengthen evaluation of transfer success, including transfers to Maryland's HBIs.

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<sup>6</sup> AACC Institutional Research, 2024.

<sup>7</sup> *Ibid.*

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The current Arts and Sciences Transfer structure treats each science area as a separate program with additional concentration-specific requirements beyond general education, including mandated courses that often do not align with STEM transfer prerequisites at partner institutions. These misalignments contribute to approximately 150 substitution petitions annually. The new A.S. framework removes unnecessary rigidity while maintaining general education requirements, aligning curricula with partner institutions through ARTSYS to ensure the transferability of 60 credits.

By consolidating science concentrations, the program also reduces administrative burden, enabling more targeted assessment of student learning outcomes and more efficient use of institutional resources. Strategically, the program strengthens articulation, supports Maryland's demand for STEM and health-related professionals, advances equity through expanded access to high-demand fields, and aligns with the *2022 Maryland State Plan for Postsecondary Education* by increasing completions in discipline-specific majors and improving transfer outcomes statewide.

## **E. Relevance to High-demand Programs at Historically Black Institutions (HBIs)**

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

The A.S. Science Transfer degree program at AACC, with proposed AOCs in Astronomy/Physics, Biology, Chemistry, Earth Sciences, Environmental Sciences, Plant Science, and Pre-Medical Professionals, strengthens and expands the capacity of Maryland's HBIs to provide high-quality and unique STEM and health-related programs. By creating a robust transfer pipeline, fostering equitable access for underrepresented students, and aligning with HBI missions, this program enhances the ability of HBIs to meet Maryland's workforce demands and educational equity goals, without duplicating their offerings.

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

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

The A.S. Science Transfer degree program at AACC supports and reinforces the distinct missions of Maryland's HBIs by offering a complementary transfer pathway that prepares students for success without duplicating or diminishing existing programs. By aligning coursework with HBI curricular expectations and transfer requirements, the program strengthens institutional capacity to advance equity, access, and excellence in STEM and health-related fields.

At Morgan State University, the mission centers on delivering high-quality education to a diverse student population through strong STEM disciplines such as Biology, Chemistry, and

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Computer Science. AACC's aligned programs will supply well-prepared, transfer-ready students who can successfully transition into Morgan's upper-division coursework. This alignment bolsters Morgan's identity as a national leader in STEM research, leadership development, and community advancement.

Similarly, Bowie State University's emphasis on academic excellence and expanding opportunities for underrepresented students in fields such as Bioinformatics and Environmental Science is supported through AACC's STEM programs. By preparing students for Bowie's rigorous advanced pathways, AACC contributes to Bowie's long-standing commitment to student success and the diversification of the STEM workforce.

The program also aligns closely with Coppin State University's mission as an urban HBCU dedicated to transformative, inclusive education in STEM and the health sciences. AACC's Premedical Professionals and Biology AOCs create a strong academic pipeline of students, particularly those from urban and minority backgrounds, who are well positioned to contribute to Coppin's work in community engagement, health equity, and economic mobility in Baltimore.

At the University of Maryland Eastern Shore (UMES), a land-grant HBCU serving first-generation and diverse students, programs in Environmental Science and Agriculture emphasize sustainability, applied research, and solutions to regional and global challenges.

Collectively, the A.S. Science Transfer degree and its Areas of Concentration enhance the missions of Maryland's HBIs by strengthening transfer pipelines, improving student readiness, and supporting each institution's unique contribution to Maryland's higher education ecosystem.

## **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 A.S. Science Transfer degree program was developed as part of the Academic Portfolio Review process at AACC, a multi-year initiative involving faculty and departmental leadership. The review focused on comprehensive data analysis related to courses, programs, and student success. Over the past two years, the Science faculty have engaged in extensive discussions about the proposed changes. Subject matter experts were brought in to carefully evaluate the curriculum within each AOC.

Each AOC is supported by a team of faculty members who are experts in their respective disciplines. These groups include faculty from across the science disciplines who have been actively involved in program review and learning outcomes assessment since the department's reorganization under the Assistant Dean of Science in 2019. All full-time faculty at AACC hold at least a master's degree in their field, with more than half having earned a doctorate,

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ensuring a high level of academic expertise and instructional quality.

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

Upon successful completion of this program, students will be able to:

1. Analyze and solve problems by applying discipline-appropriate quantitative tools, concepts, and methods.
2. Investigate physical phenomena experimentally, using discipline-specific tools and methodology.
3. Apply discipline-specific lab safety rules.
4. Apply knowledge of discipline-specific fundamental concepts to explain experimental outcomes or real-world phenomena.
5. Collect, analyze, and interpret information based on scientific reasoning and discipline-specific concepts.

This program aligns with all the College's core competencies.

The assessment activities related to the above program outcomes may take diverse forms including, but not limited to, standardized assessments and faculty-developed evaluations, surveys, and evaluation of student work. The college believes that such input is vital to its responsibility to maintain quality instruction. Therefore, class time may be used at times for these activities, and it is expected that students will participate in the processes when asked.

## **3. Explain how the institution will:**

### **a. provide for assessment of student achievement of learning outcomes in the program**

Anne Arundel Community College is committed to ensuring that its students and graduates are among the best prepared citizens and workers of the world by offering high quality, affordable, and accessible learning opportunities while also continuing the institution's excellence, accountability, and continuous learning. To this end, practices and procedures are established to ensure faculty, staff and administrators systematically assess student learning outcomes at the course, program, and institution levels.

All AACC academic departments maintain assessment plans for their programs and courses that outline learning outcomes, curriculum mapping, assessments, and data collection cycles. Assessments to measure student learning take many forms including exams, research papers and other written assignments, class discussions, performances, and lab exercises. These assessment items are mapped to course-level and program-level learning outcomes. Measures of student learning are aggregated to the appropriate level (course, program, institution) to provide the basis for faculty discussions on curriculum, pedagogy, and assessment.

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In addition to regular cycles of program-level learning outcomes assessment, all credit degree and certificate programs are reviewed on an annual basis for evidence of program retention and completion, success in program foundational courses, enrollment, and assessment practices. Program review also includes a review of program outcomes. The Science Department has established learning outcomes for all 100- and 200-level courses and has documented student achievement in these areas with the College's Director of Assessment and Instructional Innovation.

## b. document student achievement of learning outcomes in the program

Departmental learning outcome assessment plans are submitted to and approved by AAAC's Director of Assessment and Instructional Innovation. Each AOC is reviewed on a regular 2-year cycle, and all data and reports are tracked and housed in that office.

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

| General Education Requirements: 34-36 credits                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>English Composition:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>6 credits</b>                                                                                                                                                          |
| ENG 101 Academic Writing and Research 1<br>Learn critical writing, reading, and thinking strategies. Write multiple essays, culminating in an instructor-guided research paper. Analyze a variety of texts and identify their cultural, historical, and social contexts. Develop foundational information literacy, academic research, and documentation skills.                                                                                                                                                                                                             | 3 credit hours                                                                                                                                                            |
| ENG 102 Academic Writing and Research 2<br>Develop advanced critical writing, reading, and thinking skills. Compose analytical and argumentative essays, culminating in the production of an independent, extensive, multiple-source, fully documented research paper. Analyze a variety of texts through close reading and explore their cultural, historical, and social contexts. Learn advanced research techniques, including formulation of research questions, identification of multiple audiences, analysis of rhetorical situations, and ethical research tactics. | 3 credit hours                                                                                                                                                            |
| <b>Arts and Humanities:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>6 credits</b>                                                                                                                                                          |
| Select from list of approved courses                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                           |
| <b>Biological and Physical Sciences:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>7-8 credits</b>                                                                                                                                                        |
| Select two from the list. Must include at least one lab of science.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Lab Science (4 credits): BIO 101, BIO 103, BIO 104, BIO 113, CHE 111, CHE 112, CHE 113, PHS 113, PHY 111, PHY 211, PHY 212.<br>LECTURE ONLY (3 CREDITS): BIO 135, PHS 109 |
| <b>Mathematics:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>3-4 credits</b>                                                                                                                                                        |
| Select from list of approved courses                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | MAT 135, 137, 145, 151 or MAT 191                                                                                                                                         |

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| General Education Requirements: 34-36 credits                                                                        |                                                                                                                                                                                                                                    |
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| <b>Social and Behavioral Sciences:</b>                                                                               | <b>6 credits</b>                                                                                                                                                                                                                   |
| Select from list of approved courses                                                                                 |                                                                                                                                                                                                                                    |
| <b>Additional Gen. Ed. Requirement: Wellness and Technology</b>                                                      | <b>6 credits</b>                                                                                                                                                                                                                   |
| Program Requirements: 24-26 credits                                                                                  |                                                                                                                                                                                                                                    |
| <b>Students must select remaining courses from any not taken above and this list of additional approved courses.</b> |                                                                                                                                                                                                                                    |
| <b>Science Courses</b>                                                                                               | AST 112, BIO 105, BIO 122, BIO 201, BIO 207, BIO 211, BIO 212, BIO 214, BIO 215, BIO 220, BIO 221, BIO 223, BIO 233, BIO 234, CHE 213, CHE 214, CHE 253, PHS 119, PHS 120, PHS 215, PHY 112, PHY 213, SCI 101, SCI 201, SCI 202    |
| <b>Math Courses</b>                                                                                                  | MAT 146, MAT 192, MAT 201, MAT 202, MAT 212                                                                                                                                                                                        |
| <b>Diversity Requirement</b>                                                                                         | All students in associate degree programs must satisfy the diversity requirement. In many cases, students may satisfy this requirement simultaneously as they satisfy a general education course requirement.                      |
| <b>Technology Requirement</b>                                                                                        | All students in associate degree programs must satisfy the technology requirement. In many cases, students may satisfy this requirement simultaneously as they satisfy a general education course requirement or with an elective. |
| <b>Wellness Requirement</b>                                                                                          | All students in associate degree programs must satisfy the wellness requirement.                                                                                                                                                   |

| Course Descriptions for Program Requirements                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                            |
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| <b>AST 112 - Stars and Stellar Systems (4 credit hours)</b><br>Learn about the universe beyond our solar system. Explore topics including the nature of stars and their evolution, galaxies and quasars, the universe as a whole and the possibility of life elsewhere in the Universe.                                                                                                                                                                 | <b>BIO 101 - Foundations of Biology: Molecules and Cells (4 credit hours)</b><br>Study the basic biological principles common to living organisms and insights into the scientific methods used to determine those principles. Topics include biological molecules, cell structure and metabolism, biological organization, homeostasis, reproduction and development, and heredity.                                                       |
| <b>BIO 103 - General Botany (4 credit hours)</b><br>Gain an introduction to members of the plant kingdom and their closest relatives. Learn the unique life strategies of plants that are the basis for their importance to humans and their role in shaping global ecology. Through an examination of plant form and function, students will learn how and why plant life defines the biological potential of both terrestrial and aquatic ecosystems. | <b>BIO 104 - Foundations of Biology: Ecology and Evolution (4 credit hours)</b><br>Investigate the major evolutionary and ecological processes that operate in the natural world. Explore the diversity of life forms on Earth and human impacts on that diversity. Collect, quantify, interpret and present empirical data in order to gain a foundation in the scientific and communication skills used to develop scientific knowledge. |
| <b>BIO 105 - General Zoology (4 credit hours)</b><br>An introduction to members of the animal kingdom                                                                                                                                                                                                                                                                                                                                                   | <b>BIO 107 - Environmental Science (4 credit hours)</b><br>Investigate major issues in contemporary environmental                                                                                                                                                                                                                                                                                                                          |

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| Course Descriptions for Program Requirements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
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| and their closest relatives. Study how animals have evolved adaptations that allow representatives to occupy all terrestrial and aquatic ecosystems. Students will learn how vertebrate and invertebrate animals are classified and how particular adaptive strategies are important for their survival through an examination of animal form and physiology.                                                                                                                                                                                                                         | science with special emphasis on scientific reasoning and the skills needed to resolve contemporary problems. Perform field and laboratory exercises focused on ecosystem dynamics, habitat assessment, pollution, resource management and environmental restoration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>BIO 113 - Sustainable Horticulture (4 credit hours)</b><br>Identify native and cultivated plants used in horticulture, landscaping and restoration. Apply the principles of sustainability to the propagation, growth and use of these plants in horticultural settings. Topics include plant form and function, soil fertility, propagation, biotechnology and integrated pest management.                                                                                                                                                                                        | <b>BIO 122 - Fundamentals of Ecology Travel Study 1 (4 credit hours)</b><br>Travel to unique ecosystems on planet earth to study the evolution, structure and function of ecosystems. Examine the basic geology, hydrology, climate, organism dynamics, and human cultures that affect example ecosystems. Apply the scientific method to principles of ecology, evolution, conservation, and human impacts.                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>BIO 135 - Principles of Nutrition (3 credit hours)</b><br>Learn the digestion, absorption and physiological function of nutrients in the body. Emphasis is placed on normal nutrition and the relationship between nutrients and chronic disease. Nutrition needs of the healthy person through stages of the life span are included. This course does not satisfy a lab science requirement.                                                                                                                                                                                      | <b>BIO 201 - Plant Taxonomy (4 credit hours)</b><br>Studies the identification, naming and classification of native vascular plants. Master the applications of plant taxonomy for the identification of individual plant species and the designation of various habitat types like forests, meadows, wetlands and bogs. Learn the features of plants that are used for plant identification through the use of manuals, keys, plant collections and herbaria. May require one day long Saturday field trip.                                                                                                                                                                                                                                                                                                                         |
| <b>BIO 207 - Plant Propagation (3 credit hours)</b><br>Learn an introduction to the principles and practices used in the propagation of native and cultivated plants. Study how the techniques of seed propagation, cuttings, grafting, separation, division and micropropagation are used to produce plants for home use and commercial applications. Learn how plants are improved through plant breeding and genetic modification.                                                                                                                                                 | <b>BIO 210 - Ecological Principles and Environmental Assessment (4 credit hours)</b><br>Examine the interrelationships between terrestrial and aquatic systems, focusing on field-based investigations. Apply environmental assessment techniques to determine physical, chemical and biological characteristics of a watershed and the factors affecting water quality. Use Geological Information Systems (GIS) as well as digital meters and Global Positioning Systems (GPS) in the field for data collection. Learn about the factors affecting ecosystem structure and function, including biogeochemical cycles, symbiotic relationships, and the impact of alien species. Investigate the unique characteristics and functions of different ecosystems, including a salt marsh, rocky shore, riparian buffer and coral reef. |
| <b>BIO 211 - Estuarine and Marine Biology (4 credit hours)</b><br>Investigate the biology and ecology of estuaries and the nearshore marine environment, with a special focus on Chesapeake Bay and its tributaries. Study the interrelationships between the physical environment and the biodiversity observed in the wide array of aquatic habitats found in estuaries and along the coast. Learn how to sample, monitor, and identify the important species of these habitats through field collections and laboratory evaluation. Examine how humans affect estuarine and marine | <b>BIO 212 - Genetics (3 credit hours)</b><br>Study the mechanism of heredity moving from the discoveries of Mendel through molecular genetics. Apply studies in viral, prokaryotic and eukaryotic model systems to the understanding of human inheritance and molecular genetics.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

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| Course Descriptions for Program Requirements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
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| organisms and habitats. Requires one Saturday research field trip.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>BIO 214 – Ecology (3 credit hours)</b><br>Discover the unique ecology of Maryland’s diverse ecosystems. Examine the geographic history, ecology and environmental attributes of the barrier islands, coastal bays, coastal plain, Piedmont region, Appalachian Mountains and the Chesapeake Bay. This course does not satisfy a lab science requirement.                                                                                                                                                                                                                                                                                                                                                                             | <b>BIO 215 - Restoration Ecology (3 credit hours)</b><br>Learn basic techniques used to repair, restore and create ecosystems. Emphasis is placed on the diverse ecosystems of Maryland. Investigate how water quality is improved through established forest and meadow habitats, tidal and non-tidal wetlands, underwater grass meadows, and dune systems as well as through the construction of rain gardens and vegetated storm water treatment systems. This course does not satisfy a lab science requirement.                                                                                                                                                                                                                              |
| <b>BIO 220 - Genetics with Laboratory (4 credit hours)</b><br>Study the mechanism of heredity, moving from the discoveries of Mendel through molecular genetics. Apply studies in viral, prokaryotic and eukaryotic model systems to the understanding of human inheritance and molecular genetics. Perform techniques used in research and biotechnology settings.                                                                                                                                                                                                                                                                                                                                                                     | <b>BIO 221 - Molecular Biotechniques (4 credit hours)</b><br>Investigate the theory and application of molecular biology as they apply to research, medicine, agriculture, bioremediation and criminology. Use extensive hands-on procedures in the integrated lecture/lab to reinforce the theory behind cloning, genetic engineering and forensic DNA science. Learn concepts that govern the use of molecular techniques and the applicable laboratory skills.                                                                                                                                                                                                                                                                                 |
| <b>BIO 223 - General Microbiology (4 credit hours)</b><br>Study of the fundamental principles of microbiology, the diversity of microorganisms and the relation of microorganisms to disease and industry. Laboratory work includes the examination of media, culture methods, microscope examinations and identifications, the control of microorganisms by physical and chemical means and some quantitative techniques.                                                                                                                                                                                                                                                                                                              | <b>BIO 233 - Anatomy and Physiology 1 (4 credit hours)</b><br>A study of biological chemistry, cell structure and function, tissues, and the histology, gross anatomy and physiology of the integumentary, skeletal, muscular and nervous systems.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>BIO 234 - Anatomy and Physiology 2 (4 credit hours)</b><br>A study of the histology, gross anatomy and physiology of the circulatory, lymphatic, respiratory, digestive, endocrine, urinary and reproductive systems and early human development.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>CHE 111 - General Chemistry 1 (4 credit hours)</b><br>Study atomic theory and periodic relationships, chemical bonding, gases, liquids and solids, stoichiometry, kinetic-molecular theory, solutions, oxidation-reduction, reactions of molecules and ions and nuclear chemistry. Laboratory work includes basic techniques and principles as well as quantitative measurements by titration, calorimetry and stoichiometry.                                                                                                                                                                                                                                                                                                                  |
| <b>CHE 112 - General Chemistry 2 (4 credit hours)</b><br>Study the fundamental principles and quantitative aspects of chemical equilibrium, acid-base chemistry and acid-base equilibria, solubility equilibria, thermodynamics, electrochemistry, kinetics, basic concepts in nuclear chemistry and an introduction to organic chemistry nomenclature and structure. Laboratory work applies theoretical principles presented in the lecture and includes: data collection and analysis, basic laboratory techniques and use of chemical instrumentation; use of chemical literature and databases, use of a laboratory notebook to record data and results, methods of qualitative analysis, and written communication of results and | <b>CHE 113 - Fundamentals of Organic and Biochemistry (4 credit hours)</b><br>Study an introduction to the chemistry of carbon compounds and of living systems. Nomenclature, structure, properties and reactions of the principal organic families are studied, and anthropogenic carbon compounds are discussed in relation to health and the environment. Biochemistry studies the structure, properties, and functions of carbohydrates, proteins, lipids and nucleic acids. Protein synthesis, enzyme regulation and metabolism are included. Intended for students in health-related professions and students interested in applying chemistry to the environment and living systems. Science and engineering students should take CHE 112. |

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| Course Descriptions for Program Requirements                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
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| conclusions in the form of lab reports.                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>CHE 213 - Organic Chemistry 1 (4 credit hours)</b><br>Study the chemistry of hydrocarbons and their simple derivatives, emphasizing their structures, properties and mechanisms of reactions. Use general laboratory techniques and procedures in organic chemistry and learn modern methods of analysis, including gas chromatography.                                                                               | <b>CHE 214 - Organic Chemistry 2 (4 credit hours)</b><br>Study the chemistry of the families of organic compounds, emphasizing preparations, reactions, and mechanisms of reactions. Learn to apply spectroscopy to determine structure and preview compounds of biological importance. Synthesize representative organic compounds in the laboratory. Use modern methods of analysis, including infrared and nuclear magnetic resonance spectroscopy.                                                                                                                  |
| <b>CHE 253 - Biochemistry (3 credit hours)</b><br>Study the structures, reactions, and relationships of biochemical systems, focusing on proteins, enzyme kinetics, carbohydrates, lipids, membrane structure, metabolism, nucleic acids, and genetic information.                                                                                                                                                       | <b>MAT 135 - Statistics (3 credit hours)</b><br>Use meaningful data to explore concepts in probability and statistics including measures of central tendency and dispersion. Develop statistical literacy by studying graphical representations of data, discrete and continuous probability distributions, and sampling techniques and theory. Construct and interpret confidence intervals, find lines of best-fit, and perform hypothesis tests for means, proportions, and independence. Technology use is required throughout the course for statistical analyses. |
| <b>MAT 137 - College Algebra (3 credit hours)</b><br>Learn algebra concepts useful in the fields of business, social science, life science and health science. Study functions and their applications including linear, quadratic, higher-degree polynomial, rational, exponential and logarithmic functions. Solve systems of linear and non-linear equations and inequalities. Explore matrices, sequences and series. | <b>MAT 145 - Precalculus 1 (3 credit hours)</b><br>Learn college algebra and introductory trigonometry. Algebraic topics include multiple representations of polynomial, rational, exponential, and logarithmic functions, systems of equations and related graphs, equations, inequalities and applications. Trigonometric topics include an introduction to angle and radian measure, right triangle relationships, trigonometric functions of any angle, laws of sines and cosines, graphs, applications and trigonometric equations.                                |
| <b>MAT 146 - Precalculus 2 (3 credit hours)</b><br>Study trigonometry and advanced algebra to prepare for calculus. Trigonometric topics include angle measurement, definitions of the six trigonometric functions from the right triangle and unit circle perspectives, graphs, identities, inverses and equations. Algebraic topics include conic sections, polar coordinates, and a review of functions and graphs.   | <b>MAT 151 - Accelerated Precalculus (4 credit hours)</b><br>Strengthen algebra and mathematical modeling skills to prepare for further studies in mathematics, engineering, and the sciences. Study equations and graphs including polynomial, rational, exponential, logarithmic, and trigonometric functions. Use trigonometric identities to simplify expressions and solve equations. Explore plane analytic geometry.                                                                                                                                             |
| <b>MAT 191 - Calculus and Analytic Geometry 1 (4 credit hours)</b><br>Find limits, derivatives and integrals of functions. Apply these concepts to explicit, implicit, algebraic, trigonometric and transcendental functions, using derivatives to analyze graphs and to model real situations.                                                                                                                          | <b>MAT 192 - Calculus and Analytic Geometry 2 (4 credit hours)</b><br>Learn numerical and analytical techniques for integration and apply these techniques to solve problems involving definite integrals. Other topics include solving separable differentiable equations, extending the concepts of calculus to polar and parametric forms, using Taylor polynomials to approximate functions, and determining the convergence or divergence of improper integrals, infinite sequences and infinite series.                                                           |
| <b>MAT 201 - Calculus and Analytic Geometry 3 (4 credit hours)</b><br>Extend the ideas of limits, differentiation and                                                                                                                                                                                                                                                                                                    | <b>MAT 202 - Linear Algebra (4 credit hours)</b><br>Study vector spaces and linear transformations on finite-dimensional vector spaces. Topics include linear                                                                                                                                                                                                                                                                                                                                                                                                           |

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| Course Descriptions for Program Requirements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
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| integration to two or more dimensions. Study vectors and vector functions, partial differentiation, gradients, directional derivatives and tangent planes, optimization, Lagrange multipliers, iterated integration, line and surface integrals, and the classical theorems of Green, Gauss and Stokes.                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | systems, matrices, determinants, inner product spaces and eigen values.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>MAT 212 - Differential Equations (4 credit hours)</b><br>Analyze and solve ordinary differential equations of various types: separable, exact, linear equations of all orders and systems of linear equations. Master techniques including integrating factors, undetermined coefficients, the Wronskian, variation of parameters, reduction of order, power series, Laplace transforms and numerical approximations. Solve systems of linear equations using operator methods, numerical approximations and matrix methods. Apply these techniques to various applications including trajectories, mixing, growth, decay, vibrating springs, electric circuits and resonance. Use a mathematical software system as an integral and substantial part of the course. | <b>PHS 109 - General Oceanography (3 credit hours)</b><br>Survey the physical, chemical, meteorological, biological, and geological aspects of the oceans. Topics include waves, currents, tides and the chemistry of seawater, ecosystems and life in oceans and estuaries, plate tectonics, and marine sediments. Discuss environmental trends and problems.                                                                                                                                                                                          |
| <b>PHS 113 - Physical Geology (4 credit hours)</b><br>Investigate the Earth's dynamic system of interconnected processes. Discuss the unifying theme of plate tectonics in context with minerals and rocks, volcanoes, geologic time, crustal deformation and mountain building, earthquakes, Earth's interior, evolution of ocean floors and continents, mass movement, streams and floods, groundwater and other surface processes. An optional field trip is available.                                                                                                                                                                                                                                                                                              | <b>PHS 114 - Natural Disasters (3 credit hours)</b><br>Examine the causes, effects, and societal responses to events such as earthquakes, volcanic eruptions, tsunamis, hurricanes, wildfires, floods, and landslides. Explore the scientific principles behind these phenomena, their distribution and frequency, and how they affect communities across the globe. Develop a deeper understanding of the relationship between humans and the Earth system using case studies and current events.                                                      |
| <b>PHS 119 - Fundamentals of Weather (4 credit hours)</b><br>Explore basic principles of atmospheric science and investigate types of interesting weather phenomena. Learn about atmospheric warming mechanisms, development of clouds, global and regional wind patterns and all categories of severe weather developments. Analyze and interpret weather maps, satellite images and atmospheric thermodynamic diagrams. Develop informed conclusions about Earth's weather and climate changes.                                                                                                                                                                                                                                                                       | <b>PHS 120 - Global Climate Change (3 credit hours)</b><br>Investigate the causes and consequences of global climate change. Learn the science behind our changing climate and how atmospheric carbon dioxide affects the air, land, and water. Research the effects of climate change on plants, animals, and the oceans. Determine the health, economic, and social impacts of climate change on humans. Interpret climate science data, discuss international climate agreements, and learn about mitigation efforts that help fight climate change. |
| <b>PHS 215 - Introduction to Soil Science (4 credit hours)</b><br>Explore the nature and properties of soil, including the relationship between soil and the physical, biological, and chemical principles that operate within Earth's system. Discuss the practical applications of soil science: soil management strategies for sustainable agriculture, conservation,                                                                                                                                                                                                                                                                                                                                                                                                | <b>PHY 111 - Fundamentals of Physics 1 (4 credit hours)</b><br>Discover the fundamental concepts and methods of physics. Study the classical principles and their application to algebra-based mathematical analysis of physical problems. Analyze topics including mechanics (kinematics, laws of motion, force, momentum, and energy), fluids, and heat. Meets the requirements of career programs and transfer programs in liberal arts,                                                                                                             |

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| Course Descriptions for Program Requirements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
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| land use planning, and remediation of degraded soils. Develop laboratory skills and sampling methods by collecting, characterizing, classifying, and interpreting soil data.                                                                                                                                                                                                                                                                                                                                                                                                               | secondary education and health-related fields that require algebra-based general physics.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>PHY 112 - Fundamentals of Physics 2 (4 credit hours)</b><br>Discover the fundamental concepts and methods of physics, as a continuation of PHY 111. Study physical principles and their application to algebra and trigonometry based mathematical analysis of physical problems. Analyze topics including electricity and magnetism, electric circuits, optics, quantum mechanics, and special relativity. Meets the requirements of career programs and transfer programs in liberal arts, secondary education, and health-related fields that require algebra-based general physics. | <b>PHY 211 - General Physics 1 (4 credit hours)</b><br>Discover the fundamental concepts and methods of physics as a basis for further study in science and engineering. Study the classical principles and their application to calculus-based mathematical analysis of physical problems. Analyze topics including mechanics (kinematics, laws of motion, force, momentum, and energy) and basic fluid theory.                                                                                                                                                         |
| <b>PHY-212 General Physics 2 (4 credit hours)</b><br>Examine the topics of thermodynamics, electrostatics, and direct current circuit theory while expanding on the theory from PHY 211 demonstrating these topics application to the calculus-based mathematical analysis of physical problems.                                                                                                                                                                                                                                                                                           | <b>PHY 213 - General Physics 3</b><br>Continue the study of physics and its application to the calculus-based mathematical analysis of physical problems. Analyze topics including magnetism, electrodynamics and Maxwell's equations, alternating current circuit theory and applications, optics, quantum mechanics, and special relativity.                                                                                                                                                                                                                           |
| <b>SCI 101 - Introduction to Research (1 credit hour)</b><br>Investigate the process of conducting research, from initial literature reviews to project outline and data collection. Engage in a variety of research projects at AACC and during field trips to local research facilities in the Chesapeake region's diverse habitats, using a wide range of scientific tools and technologies. Design a research project to conduct with a faculty mentor at AACC.                                                                                                                        | <b>SCI 201 - Research Experience (2 credit hours)</b><br>Design and conduct an original research project with the guidance of a faculty mentor. Operate a variety of discipline-specific equipment and learn research methods and techniques. Search databases to find existing work in the relevant field and determine how the research project adds to the body of knowledge. Enhance oral presentation skills by presenting research findings to faculty and peers and develop a plan to present findings to a broader audience through publications or conferences. |
| <b>SCI 202 - Research Communication (1 credit hour)</b><br>Explore the process of research communication to a diverse audience with a focus on scientific journal articles and presentations at scientific conferences. Critique existing articles and presentations to refine your own list of best practices for research communication. Examine research results to write, edit, and submit a scientific journal article for publication. Design a research presentation to present during the course or at a regional conference in your field.                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

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

Please refer to Section 4 above which outlines the General Education requirements.

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

Not applicable.

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

Not applicable.

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

Anne Arundel Community College ensures students receive clear, complete, and timely information regarding curriculum, course and degree requirements, faculty-student interaction, technology expectations, equipment needs, learning management systems, academic support services, financial aid, and costs and payment policies. Program information is published in the college catalog and on the college website, both accessible to all students and regularly reviewed and updated by the Science Department in coordination with Academic Affairs.

Accuracy is maintained through AACC's integrated curriculum and catalog management system, which requires review and approval by content managers and the college catalog editor in partnership with Strategic Communications. Upon approval, the A.S. Science Transfer degree program will be clearly presented, including requirements, course formats, technology competencies, equipment expectations, and use of the Canvas LMS. Students receive course-specific information through syllabi at the start of each term. The college provides comprehensive academic support services and financial aid services, with information on tuition and fees available online.

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

Anne Arundel Community College ensures the accuracy of program presentations in advertising, recruiting and admissions materials by using procedural processes through a connected curriculum/catalog software system where content managers and the college catalog editor review and update in partnership with Strategic Communications. The college's homepage has links to six major headings, two of which directly apply to college majors and credit courses (earn a degree, certificate or college credits, and earn college credits while in high school). The main page for each heading has relevant advertising, recruiting and admissions information. In addition, across the top of every page are direct links to Programs & Courses, Apply & Register, Costs & Paying for College, and Resources for Students, Campus

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Life & Activities, and About Us.

## H. Adequacy of Articulation (as outlined in COMAR 13B.02.03.19)

1. If applicable, discuss how the program supports articulation with programs at partner institutions. Provide all relevant articulation agreements. More information for Articulation Agreements may be found here.

The A.S. Science Transfer degree program at AACC, with AOCs in Astronomy/Physics, Biology, Chemistry, Earth Sciences, Environmental Sciences, Plant Science, and Pre-Medical Professionals, is designed to enhance student outcomes by streamlining transfer success and supporting timely completion of four-year degrees at partner institutions across Maryland, including HBIs such as Bowie State University, Coppin State University, Morgan State University, and UMES. The program's flexible, concentration-based structure allows students to tailor their academic pathways to meet specific prerequisite and general education requirements of similar STEM and health-related majors statewide, reducing barriers such as credit loss or the need for additional coursework post-transfer, which can delay degree completion.

## 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 faculty member will teach in the proposed program.

| Faculty Resources |                                                        |                                              |           |                                                                        |
|-------------------|--------------------------------------------------------|----------------------------------------------|-----------|------------------------------------------------------------------------|
| Name              | Terminal Degree                                        | Academic Title                               | Status    | Courses                                                                |
| Jason Barbour     | Ph.D., University of Virginia                          | Full Professor                               | Full-time | CHE 111, PHY 111, PHY 112, PHY 211, PHY 212, SCI 101, SCI 201, SCI 202 |
| Debra Bartlett    | D.C., National University of Health Sciences           | Full Professor                               | Full-time | BIO 101, BIO 233, BIO 234, SCI 101, SCI 201, SCI 202                   |
| Robert Carp       | M.A., University of California                         | Full Professor                               | Full-time | CHE 111, CHE 112, CHE 213, CHE 214, SCI 101, SCI 201, SCI 202          |
| Jameson Coopman   | M.S. Environmental Horticulture, University of Florida | Assistant Professor                          | Full-time | BIO 103, BIO 113, BIO 201, BIO 207, BIO 215, SCI 101, SCI 201, SCI 202 |
| Micky Dehn        | M.S., Towson University                                | Associate Professor & Program Chair, Biology | Full-time | BIO 101, BIO 233, BIO 234, SCI 101, SCI 201, SCI 202                   |
| Tammy Domanski    | Ph.D., University of Maryland,                         | Full Professor                               | Full-time | BIO 101, BIO 212, BIO 220, BIO 221, SCI 101, SCI 201, SCI 202          |

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| Faculty Resources        |                                                            |                                                         |           |                                                                                          |
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| Name                     | Terminal Degree                                            | Academic Title                                          | Status    | Courses                                                                                  |
|                          | Baltimore County                                           |                                                         |           |                                                                                          |
| Chrisopher Eninger       | M.S., George Mason University                              | Assistant Professor                                     | Full-Time | BIO 101, BIO 233, BIO 234, SCI 101, SCI 201, SCI 202                                     |
| Mark Farinha             | Ph.D., Queen's University at Kingston                      | Full Professor                                          | Full-time | BIO 101, BIO 223, SCI 101, SCI 201, SCI 202                                              |
| Damacene Ferandez        | C.A.G.S., Northcentral University                          | Full Professor                                          | Full-time | PHS 109, PHS 119, PHS 120. SCI 101, SCI 201, SCI 202                                     |
| Eric Fons                | M.S., University of Florida Associate                      | Associate Professor                                     | Full-time | PHY 111, PHY 112, PHY 211, PHY 212, PHY 213, SCI 101, SCI 201, SCI 202                   |
| Sandra Fox-Moon          | Ph.D., University of Maryland Baltimore School of Medicine | Assistant Professor                                     | Full-time | BIO 101, BIO 223, SCI 101, SCI 201, SCI 202                                              |
| Mary-Ellen Holden-Musser | Ph.D., University of California at Berkeley                | Assistant Professor                                     | Full-time | BIO 101, BIO 105, BIO 233, BIO 234. SCI 101, SCI 201, SCI 202                            |
| Karen Israel             | Ph.D., R.D., University of Texas at Austin                 | Full Professor                                          | Full-time | BIO 101, BIO 135, SCI 101, SCI 201, SCI 202                                              |
| Katherine Keough         | M.S., University of Florida                                | Assistant Professor                                     | Full-time | PHS 113, PHS 215, SCI 101, SCI 201, SCI 202                                              |
| Susan Lamont             | Ph.D. Botany, Miami University of Ohio                     | Full Professor                                          | Full-time | BIO 103, BIO 107, BIO 122, BIO 201, BIO 210, BIO 215, SCI 101, SCI 201, SCI 202          |
| Deborah Levine           | Ph.D., University of California Los Angeles                | Associate Professor & Academic Chair, Physical Sciences | Full-time | AST 112, PHY 111, PHY 211, SCI 101, SCI 201, SCI 202                                     |
| Harold Li                | Ph.D., University of Maryland, College Park                | Assistant Professor                                     | Full-time | BIO 101, BIO 233, BIO 234. SCI 101, SCI 201, SCI 202                                     |
| Kelly Livernoche         | M.S., James Madison University                             | Assistant Professor                                     | Full-time | BIO 101, BIO 104, BIO 107, BIO 122, BIO 215, BIO 214, SCI 101, SCI 201, SCI 202          |
| Carrie Long              | M.S., University of Maryland College Park                  | Assistant Professor                                     | Full Time | BIO 101, BIO 233, BIO 234. SCI 101, SCI 201, SCI 202                                     |
| Seth Miller              | Ph.D Ecology (Marine Focus) UC Davis                       | Assistant Professor                                     | Full-time | BIO 101, BIO 104, BIO 107, BIO 122, BIO 211, BIO 215, BIO 214, SCI 101, SCI 201, SCI 202 |
| Anthony Santorelli       | M.S., Ph.D., University of Maryland                        | Full Professor                                          | Full-time | PHS 109, PHS 119, PHS 120. SCI 101, SCI 201, SCI 202                                     |
| Gregory Schrader         | Ph.D., Temple                                              | Full Professor                                          | Full-     | BIO 101, BIO 233, BIO 234. SCI                                                           |

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| Faculty Resources   |                                                                           |                     |           |                                                                                 |
|---------------------|---------------------------------------------------------------------------|---------------------|-----------|---------------------------------------------------------------------------------|
| Name                | Terminal Degree                                                           | Academic Title      | Status    | Courses                                                                         |
|                     | University                                                                |                     | time      | 101, SCI 201, SCI 202                                                           |
| Cindy Shenk         | M.S., Johns Hopkins University                                            | Assistant Professor | Full-Time | BIO 101, BIO 233, BIO 234. SCI 101, SCI 201, SCI 202                            |
| Maureen Sherer      | M.Ed., Johns Hopkins University                                           | Full Professor      | Full-time | CHE 111, CHE 112, CHE 113, CHE 213, CHE 214, CHE 253, SCI 101, SCI 201, SCI 202 |
| Shyamala Sivalingam | Ph.D., Bharathidasan University                                           | Associate Professor | Full-time | CHE 111, CHE 112, CHE 113, CHE 213, CHE 214, SCI 101, SCI 201, SCI 202          |
| Julie Takacs        | Ph.D., Johns Hopkins School of Medicine                                   | Associate Professor | Full-time | BIO 101, BIO 212, BIO 223                                                       |
| Lynn Tracey         | Ph.D., University of Delaware                                             | Full Professor      | Full-time | CHE 111, CHE 112, CHE SCI 101, SCI 201, SCI 202                                 |
| Benjamin Weibell    | Ph.D., The University of Alabama                                          | Full Professor      | Full-time | BIO 101, BIO 104, BIO 105, BIO 122, SCI 101, SCI 201, SCI 202                   |
| Nancy Weibell       | M.S., The University of Alabama                                           | Assistant Professor | Full Time | BIO 101, BIO 104, BIO 107, BIO 122, SCI 101, SCI 201, SCI 202                   |
| Krista White        | Ph.D., Eastern Virginia Medical School                                    | Associate Professor | Full-time | BIO 101, BIO 221, BIO 233, BIO 234. SCI 101, SCI 201, SCI 202                   |
| Andrew Yolleck      | M.Ed., Rutgers University                                                 | Assistant Professor | Full-time | Physics                                                                         |
| Jeffrey Feuer       | Ph.D., University of Rhode Island                                         | Associate Professor | Full-time | MAT 192, MAT 212                                                                |
| MaryEllen Kassebaum | Ph.D., Montana State University                                           | Professor           | Full-time | MAT 192, MAT 201, MAT 202                                                       |
| Monica Leid         | M.S., Boston University<br>M.S., University of Maryland, Baltimore County | Associate Professor | Full-time | MAT 192                                                                         |
| Thao-Nhi Luu        | M.S., University of California, Riverside                                 | Associate Professor | Full-time | MAT 202                                                                         |
| James Messenger     | M.S., Florida State University                                            | Associate Professor | Full-time | MAT 146, MAT 192, MAT 201                                                       |
| Heather Riordan     | M.A., University of Maryland College Park                                 | Professor           | Full-time | MAT 146                                                                         |
| Michael Wright      | M.A., University of Montana                                               | Assistant Professor | Full-time | MAT 192, MAT 212                                                                |

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## **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**

Anne Arundel Community College's faculty professional development is designed to deepen understanding of student-centered, evidence-based teaching practices that enhance learning outcomes for a diverse student population, including underrepresented and first-generation students in STEM fields. Training is delivered through multiple formats, including face-to-face workshops, online and hybrid courses, department-specific mini-workshops, and signature series programs aligned with the Division of Learning's priorities. These opportunities, facilitated by internal faculty experts and external consultants, are part of faculty's required professional development plans.

### **b. The learning management system**

Anne Arundel Community College utilizes Canvas LMS for all courses, including face-to-face, hybrid, and online modalities. All full- and part-time faculty teaching or developing online/hybrid courses must complete Online Focus and Online Focus-Applied training prior to course delivery. Online Focus equips faculty with best practices in online pedagogy, course design, facilitation, and technology integration, emphasizing clear navigation, explicit instructions, accessibility, and assessments that promote higher-order thinking. Online Focus-Applied enables faculty to build or refine online/hybrid courses using institutional quality standards, such as those informed by the Quality Course Action Review (Q-CAR) framework. Faculty teaching face-to-face courses receive separate Canvas LMS training tailored to in-person instruction, ensuring all program faculty are proficient in leveraging Canvas to support student engagement and learning. These training courses are regularly updated to reflect technological advancements and student feedback, ensuring alignment with best practices.

### **c. Evidenced-based best practices for distance education if distance education is offered.**

For the program's distance education components, AACC provides comprehensive training in evidence-based best practices to ensure high-quality online and hybrid course delivery. Faculty content developers collaborate with AACC's instructional designers to create courses adhering to institutional standards, informed by frameworks like Q-CAR and the Online Learning Consortium's Scorecard. Training, presentations, demonstrations, and model courses emphasize strategies for effective communication, student engagement, and higher order thinking in virtual environments. Key areas of focus include clear course navigation, accessible content, explicit instructions, and appropriate assessments. Lectures for all didactic courses are hosted on Canvas, ensuring consistent access. The College's commitment to regular training updates ensures faculty stay current with emerging distance education trends, supporting the students expected to take online/hybrid courses.

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## **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.**

Anne Arundel Community College's Andrew G. Truxal Library maintains a robust collection of online and physical resources that address all aspects of science education. There are no additional needs from the library beyond those that are already supporting existing programs.

## **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.**

Anne Arundel Community College affirms that its physical facilities, infrastructure, and instructional equipment are fully adequate to initiate the A.S. Science Transfer degree and its AOCs. The program will be implemented using existing institutional resources and has the full support of the President and Board of Trustees. The College has made sustained investments in modern, discipline-specific facilities that support instruction across the sciences. Biology and health programs are housed in the Health and Life Sciences Building, which opened in 2021. This three-story facility includes advanced laboratories, a fully equipped greenhouse, a plant tissue culture lab, and dedicated undergraduate research spaces that support hands-on learning essential for transfer preparation in STEM fields.

Physical Science disciplines are supported by the Dragun Science Building, which is currently undergoing a comprehensive renovation scheduled for completion in 2028. During the renovation, Physical Science courses are delivered in fully equipped laboratory spaces in the Center for Applied Learning and Technology (CALT), ensuring uninterrupted instruction. All instructional spaces meet or exceed current industry and safety standards for STEM and health education. AACC provides dedicated office space for full-time and adjunct faculty. These offices are equipped with appropriate technology and connectivity to support instruction, advising, and collaboration. Laboratories are equipped with discipline-specific instrumentation and technology, supported by ongoing institutional investment in STEM equipment maintenance and upgrades, ensuring instructional resources remain current and sufficient to support projected program enrollment.

- 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**

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Anne Arundel Community College provides all students and faculty with access to an institutional Microsoft Outlook email system, integrated with Microsoft 365. This system supports secure communication for academic purposes, including course updates, advising, and collaboration. Students receive email accounts upon enrollment, accessible via single sign-on (SSO) through AACC's MyAACC portal, with technical support from IIT. Faculty utilize Outlook for course-related communication and to coordinate with the IDEA Lab, ensuring seamless interaction in online/hybrid courses.

## **b. A learning management system that provides the necessary technological support for distance education**

Anne Arundel Community College's Canvas LMS supports all program courses. Canvas provides a robust platform for delivering lectures, assessments, and interactive content. The IDEA Lab ensures courses meet Q-CAR standards, with clear navigation, accessible materials, and aligned assessments. Faculty complete mandatory Online Focus and Online Focus-Applied training to design and teach online/hybrid courses, while students access Canvas with 24/7 technical support. The College's infrastructure supports high-speed internet and cloud-based Canvas hosting.

## **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 - RESOURCES                           |               |                |                |                |                |
|-----------------------------------------------|---------------|----------------|----------------|----------------|----------------|
| Resource Categories                           | Year 1        | Year 2         | Year 3         | Year 4         | Year 5         |
| 1. Reallocated Funds                          | 0             | 0              | 0              | 0              | 0              |
| 2. Tuition/Fee Revenue (c + g below)          | 56,784        | 183,692        | 256,672        | 297,242        | 339,240        |
| a. Number of F/T Students                     | 2             | 8              | 12             | 14             | 16             |
| b. Annual Tuition/Fee Rate                    | 4,732         | 4,834          | 4,936          | 5,038          | 5,140          |
| <b>c. Total F/T Revenue (a x b)</b>           | <b>9,464</b>  | <b>38,672</b>  | <b>59,232</b>  | <b>70,532</b>  | <b>82,240</b>  |
| d. Number of P/T Students                     | 10            | 30             | 40             | 45             | 50             |
| e. Credit Hour Rate                           | 139           | 142            | 145            | 148            | 151            |
| f. Annual Credit Hour Rate                    | 34            | 34             | 34             | 34             | 34             |
| <b>g. Total P/T Revenue (d x e x f)</b>       | <b>47,320</b> | <b>145,020</b> | <b>197,440</b> | <b>226,710</b> | <b>257,000</b> |
| 3. Grants, Contracts & Other External Sources | 0             | 0              | 0              | 0              | 0              |
| 4. Other Sources                              | 0             | 0              | 0              | 0              | 0              |
| <b>TOTAL (Add 1 – 4)</b>                      | <b>56,784</b> | <b>183,692</b> | <b>256,672</b> | <b>297,242</b> | <b>339,240</b> |

1. Reallocated Funds: None

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2. Tuition and Fee Revenue: Tuition & Fees are estimated to increase by 2% each year.
3. Grants and Contracts: None
4. Other Sources: None

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.**

| TABLE 2 - EXPENDITURES         |              |              |               |               |               |
|--------------------------------|--------------|--------------|---------------|---------------|---------------|
| Expenditure Categories         | Year 1       | Year 2       | Year 3        | Year 4        | Year 5        |
| 1. Faculty (b+c below)         | 0            | 0            | 0             | 0             | 0             |
| a. # FTE                       | 0            | 0            | 0             | 0             | 0             |
| b. Total Salary                | 0            | 0            | 0             | 0             | 0             |
| c. Total Benefits              | 0            | 0            | 0             | 0             | 0             |
| 2. Admin. Staff (b + c below)  | 0            | 0            | 0             | 0             | 0             |
| a. # FTE                       | 0            | 0            | 0             | 0             | 0             |
| b. Total Salary                | 0            | 0            | 0             | 0             | 0             |
| c. Total Benefits              | 0            | 0            | 0             | 0             | 0             |
| 3. Support Staff (b + c below) | 0            | 0            | 0             | 0             | 0             |
| a. # FTE                       | 0            | 0            | 0             | 0             | 0             |
| b. Total Salary                | 0            | 0            | 0             | 0             | 0             |
| c. Total Benefits              | 0            | 0            | 0             | 0             | 0             |
| 4. Equipment                   | 0            | 0            | 0             | 0             | 0             |
| 5. Library                     | 0            | 0            | 0             | 0             | 0             |
| 6. New or Renovated Space      | 0            | 0            | 0             | 0             | 0             |
| 7. Other Expenses (Supplies)   | 2,520        | 7,980        | 10,920        | 12,390        | 13,860        |
| <b>TOTAL (Add 1 – 7)</b>       | <b>2,520</b> | <b>7,980</b> | <b>10,920</b> | <b>12,390</b> | <b>13,860</b> |

1. Faculty Funds: All courses required for the proposed degree program will be taught by existing faculty. There are no new faculty resources required.
2. Admin. Staff Funds: None
3. Supportive Staff Funds: None
4. Equipment: None
5. Library: None
6. New or Renovated Spaces: None
7. Other Expenses: Funding for lab supplies.

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

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

All courses and faculty at AACC are evaluated by students using the online Student Opinion Forms (SOFs) at the conclusion of each semester. These forms have standard Likert questions with opportunities for anecdotal feedback. Students are also given the opportunity to leave comments. All faculty are evaluated each academic year based on the college's evaluation form which includes a review of SOF data. This data is also reviewed and evaluated during the faculty promotion and tenure processes. In addition to soliciting student input for faculty and course evaluation, faculty colleagues conduct classroom visitations and peer evaluations in the second and fifth year of employment and at any time of consideration for promotion or tenure for full-time faculty. Adjunct faculty are evaluated by a peer or supervisor in the first year of employment and every three years thereafter and/or at the time of consideration of promotion.

Student learning outcomes are assessed by evaluating data collected via the Canvas LMS data collection tool. Data will be collected from several assessment sources, including essays, exams, and quizzes. Faculty will compare achievement levels with the current set of student learning outcomes to determine the utility and effectiveness of the learning outcomes. This procedure leaves open the possibility of future adjustment to ensure that these outcomes drive optimal classroom instruction and yield useful data.

## **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.**

The College has an established Office of Assessment and Instructional Innovation. The Director of this office meets regularly with a faculty-run subcommittee on Learning Outcomes Assessment, a subcommittee of the Teaching and Learning Committee. The mission of the subcommittee on Learning Outcomes Assessment is to guide and oversee program-level outcomes assessments throughout the College. The Office of Assessment and Instructional Innovation provides tools to the College's various programs to assist in regular program assessment, including a Program/Department Assessment Report and a Curriculum Mapping Template to ensure alignment of course objectives and outcomes with department and/or program outcomes, as well as college-level core competencies.

Anne Arundel Community College's Educational Policies Committee (EPC) is designed to evaluate the addition or modification of new programs, and deletion of existing programs. The EPC makes recommendations to the Academic Forum/Council of the College since it is charged with evaluating existing and proposed curricula and courses so that they support educational objectives and policies and comply with established requirements from accrediting and other approving agencies. This proposed program was reviewed and approved by EPC, the Academic Forum/Council, as well as the College's Board of Trustees.

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The College conducts regular evaluations of degree programs with respect to enrollment, retention, curriculum relevancy, and outcomes assessment. All programs undergo a comprehensive review on a staggered 4-year cycle. The template includes metrics in the areas of program continuation and completion, course success, headcount and program outcomes assessment. As applicable, national exam pass rates are also evaluated during this process. The entire package is reviewed by the Program Chair/Director, Assistant Dean, Director of Assessment and Instructional Innovation, Dean, Associate Vice President for Learning & Academic Affairs, and the Provost/Vice President for Learning. The purpose of this program review is to share program successes and address program needs.

As indicated above, student satisfaction with courses and instruction is assessed for each course and instructor each semester through the collection of feedback from SOFs. Students can assess and comment on the course content, delivery, and instruction. This information is also used for faculty evaluation and considerations for promotion and tenure.

## **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.**

Anne Arundel Community College has embedded a strong commitment to open access and meaningful engagement across all aspects of its mission and strategic initiatives. The College’s guiding philosophy, articulated through its mission to deliver high quality, affordable, and innovative lifelong learning opportunities, supports an institutional culture where every student can fully participate in and benefit from the proposed program. Central to AACC’s mission is a student-centered approach that removes barriers to participation. This is reflected in strategic efforts to keep tuition rates low, expand financial aid, and ensure access to essential resources such as emergency support funding and food assistance. These measures help reduce the financial pressures that often hinder student success and enable broader engagement across income levels and life stages. The College holds itself accountable through robust data tracking and strategic indicators. Metrics such as credit and noncredit enrollment, completion and transfer rates, scholarship distribution, and student employment outcomes are carefully monitored to evaluate participation trends and inform continuous improvements.

## **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.**

Not applicable.

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## **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.**

Anne Arundel Community College has been approved by Middle States Commission on Higher Education (MSCHE) to offer degrees and certificate programs for which students could meet 50% or more of their requirements by taking distance education courses. AACC utilizes Canvas LMS to provide online lectures to students. In addition, the college has distance education classrooms equipped with cameras and audio to share lectures with students.

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

Anne Arundel Community College complies with C-RAC guidelines for distance education through policies and practices aligned with MSCHE standards such as:

- **Student Identity Verification:** All online and hybrid courses use the College's SSO and Canvas LMS authentication to verify student identity.
- **Regular and Substantive Interaction:** Faculty are required to maintain meaningful engagement through scheduled virtual meetings, discussion boards, and timely feedback, consistent with federal and C-RAC expectations.
- **Faculty Qualifications and Training:** Instructors teaching online courses complete mandatory training programs covering best practices in online pedagogy, accessibility, and course design.
- **Student Support Services:** Distance learners have full access to advising, tutoring, library resources, technology support, and counseling services through multiple modalities (online, phone, and in-person).
- **Assessment and Quality Assurance:** All online courses undergo systematic review for learning outcomes and instructional quality, using frameworks such as Q-CAR and AACC's internal assessment processes.