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

Institution Submitting Proposal	Prince George's Community College

Each action below requires a separate proposal and cover sheet.

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

Payment Submitted: (●) Yes ( ) No

Payment Type: ( ) R*STARS # 0347224 (●) Check # 0347224

Payment Amount: $850.00

Date Submitted: 12/15/22

Department Proposing Program	Natural Sciences	
Degree Level and Degree Type	Associate of Science	
Title of Proposed Program	Chemistry	
Total Number of Credits	60	
Suggested Codes	HEGIS: 4902.01	CIP: 40.0501
Program Modality	(●) On-campus ( ) Distance Education (fully online) ( ) Both	
Program Resources	(●) Using Existing Resources ( ) Requiring New Resources	
Projected Implementation Date (must be 60 days from proposal submisison as per COMAR 13B.02.03.03)	(●) Fall ( ) Spring ( ) Summer	Year: 2023
Provide Link to Most Recent Academic Catalog	URL: https://catalog.pgcc.edu/	
Preferred Contact for this Proposal	Name: Dr. Clayton Railey	
	Title: EVP and Provost of Teaching Learning, and Student Success	
	Phone: (301) 546-0406	
	Email: raileyca@pgcc.edu	
President/Chief Executive	Type Name: Dr. Falecia Williams	
	Signature: Falecia D Williams	Date: 12/15/2022
	Date of Approval/Endorsement by Governing Board:	12/08/2022

Revised 1/2021

PRINCE GEORGE'S COMMUNITY COLLEGE
pgcc.edu

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

January 10, 2023
In response to 22683 originally submitted December 15, 2022

Dear Dr. Fielder,

Prince George's Community College is requesting the addition of a new program, **Chemistry, A.S.** degree program. This degree is currently the General Studies, A.A. with Area of Concentration in Chemistry (HEGIS 4950.01; CIP 24.0199). Given the content of the curriculum, the degree type of Associate of Science is a better fit than an Area of Concentration. Several curricular changes have also been made (listed in blue font below).

The new proposed codes are as follows: HEGIS: 4902.01; CIP: 40.0501.

Proposed Program Description
The Chemistry, A.S. provides students a foundation for the field of chemistry through introductory inorganic and organic courses. Study includes atomic and molecular structures, orbital theory, chemical reactions, stoichiometry, and chemical equations. An emphasis is placed on investigating principles of chemistry through experimentation and applying scientific methods and mathematical skills to critically evaluate data and assess conclusions. Students learn laboratory protocols and develop skills using standard laboratory equipment. Both the content and critical thinking skills acquired in this program are transferable across numerous STEM disciplines. The Chemistry A.S. is a recommended program of study for a student planning to pursue a bachelor's degree in chemistry, pharmacy, biotechnology, pre-medicine and other health or allied health professions.
Proposed Program Outcomes
Graduates of the **Chemistry, A.S. degree** program will be able to:
1. Describe the structure of an atom, including components of the nucleus and electron orbitals. 2. Predict molecular structures based on atomic composition and patterns of chemical bonding. 3. Solve stoichiometric problems **based on balanced chemical equations.** 4. Predict chemical reactivity of atoms and molecules. 5. Interpret results of chemical analysis, such as NMR, chromatography, mass spectrometry, etc. 6. Apply key concepts from mathematics and biology to solve problems in chemistry. 7. Investigate principles of chemistry through experimentation, using the scientific method. 8. Report scientific findings using proper terminology and formatting, and in adherence to ethical standards.
Proposed Courses

PRINCE GEORGE'S COMMUNITY COLLEGE
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PAS-1000 First Year Experience Credits: 1 (Institutional Requirement) EGL-1010 Composition I: Expository Writing Credits: 3 (English General Education Requirement) MAT-2410 Calculus I Credits: 4 (Mathematics General Education Requirement; Critical Course) CHM-1010 General Chemistry I Credits: 4 (Science w/ Lab General Education Requirement; Critical Course) INT-1010 Introduction to Information Technology Credits: 3 (Computer Literacy Institutional Requirement) EGL-1340 Writing About Technical Topics Credits: 3 (English General Education Requirement) CHM-1020 General Chemistry II Credits: 3 (Program Requirement) CHM-1030 General Chemistry II Laboratory Credits: 2 (Program Requirement) MAT-2420 Calculus II Credits: 4 (Program Requirement) PHL-1090 Introduction to Logic Credits: 3 (Arts/Humanities General Education Requirement) CHM-2010 Organic Chemistry I Credits: 4 (Program Requirement; Critical Course) BIO-1140 Principles of Biology: Cellular and Molecular Biology Credits: 4 (~~Program~~ **Science General Education** Requirement) **PHY-1030 General Physics I Credits: 3 (Program Requirement)** **PHY-1040 General Physics Lab Credits: 1 (Program Requirement)** COM-1090 Interpersonal Communication Credits: 3 (Arts/Humanities General Education Elective) or Any Foreign Language Course Credits: 3 (Arts/Humanities General Education Elective) CHM-2020 Organic Chemistry II Credits: 3 (Program Requirement) CHM-2040 Organic Chemistry II Laboratory Credits: 2 (Program Requirement) **PHY-2030 General Physics II Credits 4 (Program Requirement)** ECN-1030 Principles of Macroeconomics Credits: 3 (Social Science General Education Elective) or ECN-1050 Principles of Microeconomics Credits: 3 (Social Science General Education Elective) or HST-1510 History of African Americans to 1877 Credits: 3 (Social Science General Education Elective) PSY-1010 General Psychology Credits: 3 (Social Science General Education Elective) or SOC-1010 Introduction to Sociology Credits: 3 (Social Science General Education Elective)
Total Proposed Number of Credits: 60

Prince George's Community College's Curriculum Committee and Board of Trustees have approved this new program. The additional MHEC paperwork is also included. A payment of eight hundred fifty dollars ($850) has been forwarded to cover the new program fee. Feel free to contact me with any questions.

Respectfully,

Clayton A. Railey, II

Dr. Clayton Railey
EVP and Provost of Teaching, Learning, and Student Success
Prince George's Community College

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NEW ACADEMIC DEGREE PROGRAMS, NEW STANDALONE CERTIFICATE PROGRAMS, AND SUBSTANTIAL MODIFICATIONS TEMPLATE

1. Name of Proposed Certificate/Degree Program: Chemistry, A.S.
2. Type of Proposal: New Certificate/Degree Program

PART A: Centrality to Institutional 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.

For more information: PGCC Mission Statement.

Prince George's Community College (PGCC) proposes replacing the Associate of Arts in General Studies with a Concentration in Chemistry to a standalone degree, Associate of Science in Chemistry. The Chemistry, A.S. provides students a foundation for the field of chemistry through introductory inorganic and organic courses. Study includes atomic and molecular structures, orbital theory, chemical reactions, stoichiometry, and chemical equations. An emphasis is placed on investigating principles of chemistry through experimentation and applying scientific methods and mathematical skills to critically evaluate data and assess conclusions. Students learn laboratory protocols and develop skills using standard laboratory equipment. Both the content and critical thinking skills acquired in this program are transferable across numerous STEM disciplines. The Chemistry A.S. is a recommended program of study for a student planning to pursue a bachelor's degree in chemistry, pharmacy, biotechnology, pre-medicine and other health or allied health professions.

Prince George's Community College is committed to providing affordable, high-quality learning experiences that support personal, professional, and educational development of the diverse population of individuals in this region. This program supports that portion of the Mission, as chemistry is a foundational discipline/major trusted for the capacity to cultivate and identify students who possess the critical thinking skills, hands-on abilities in lab-settings, collaborative/team-work skills and discipline necessary for subsequent success in STEM and healthcare professions. By preparing students to succeed in these professions, the program contributes to the economic equity and vibrancy of our community.

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

For more information: FY2022-2025 Vision, Mission, and Strategic Goals and Vision 2030 Strategic Imperatives

Strategic Goals Prince George's Community College FY2022-2025:

A Strategic Imperative of Prince George's Community College is "by 2030, at least 30% of graduates will complete an Associate degree and a bachelor's degree within six years of entering the community

college as a degree seeking student." Nationally, it is standard for chemistry majors to take physical chemistry the first semester of junior year. Elevating from CHM AA to CHM AS, prepares students to immediately enroll in physical chemistry their junior year at a transfer institution. Previously, PGCC chemistry students were not required to take the calculus-based physics lecture and lab, which are prerequisites for physical chemistry. This created a two-semester delay before chemistry transfers could enroll in physical chemistry. Equipping PGCC students with two semesters of calculus-based physics improves their chances of obtaining the bachelor's degree in four years.

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 current Associate of Arts in General Studies with an area of Concentration in Chemistry program are funded through the annual operating budget for Teaching, Learning, and Student Success. That funding will be used for this newly proposed A.S. standalone program. This program will not require any additional expenditures outside those that are offset by increased tuition revenue from projected increased enrollment in the program (details are provided in Part L – Table 1). This new program can be implemented without the development of new courses, and therefore does not require dedicated financial support. There are no new costs for equipment, instructional supplies, facilities, or faculty and staff.

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

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

The proposed A.S. in Chemistry program has the necessary support at the department, division, and institutional level to operate successfully. The Natural Sciences department that will house the degree is well-established at PGCC, with an existing cadre of full-time tenured/tenure-track faculty, as well as qualified adjunct faculty, available to teach the program courses (see the table in Part I for a full listing of faculty), and administrative support personnel. All courses in the program can be taught by existing faculty.

As outlined in Parts K and L, PGCC is confident that the existing administrative and technical supports and physical facilities available to the department and college as a whole are sufficient to ensure the program's viability – the department is not seeking any capital investments or specialized facilities, since current classroom, office, and lab space in Chesapeake Hall will suffice, nor is it seeking any additional administrative positions or technology supports to successfully deliver the program. At the college level, E-Learning Services and our Technology Help Desk are able to provide comprehensive technical assistance to faculty and students.

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

The program implementation is long-term, with a tenured/tenure-track faculty dedicated to the ongoing course offerings to ensure students are able to complete the degree within a reasonable time frame. The college is committed to student success and will provide all enrolled students with the necessary courses and resources (such as advisors to guide students through the program) so they can graduate on schedule.

PART 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***

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

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

a. The need for the advancement and evolution of knowledge

Within our community, state, nation and across the globe there is an ever-increasing need for individuals prepared to become STEM and healthcare professionals. The critical thought, problem solving ability, and work ethic needed to withstand the rigors of these career fields are fostered in a chemistry major.

A student graduating with the CHM AA who is seeking to major in chemistry upon transfer is likely to have graduated without taking physics. Two semesters of calculus-based physics lecture and lab is required before students can take physical chemistry. Requiring physics in the PGCC chemistry major (CHM AS) enables our students to transfer to four-rear chemistry programs as true juniors, ready to take physical chemistry their first semester of transfer.

b. Societal needs, including expanding educational opportunities and choices for minority and educationally disadvantaged students at institutions of higher education.
Prince George's Community college is a minority serving institution. As of 2019, about 61% of Prince George's County residents identify as black and about 20% Hispanic. The CHM AA program will allow PGCC to expand the opportunities available to its service population by providing a degree program that prepares and sends forward students with the critical thinking skills and educational behaviors/practices necessary to become the STEM and healthcare professionals for which there is great demand.

*c.*The need to strengthen and expand the capacity of historically black institutions to provide high quality and unique educational programs.
The CHM AS program is a high-quality program that enables graduates a smooth transition into four-year programs, on schedule with their non-transfer peers. Upon transfer, our graduates will not delay enrolling in physical chemistry, pending the completion of two semesters of calculus-based physics.

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

The 2022 Maryland State Plan for Higher Education outlines three primary goals for the postsecondary community in Maryland:

Student Access: Ensure equitable access to affordable and high-quality postsecondary education for all Maryland residents.

Student Success: Promote and implement practices and policies that will ensure student success.

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

This new program proposal aligns most closely with the **Student Success** goals, and specifically with **Priority 6:** Improve systems that prevent timely completion of an academic program.

As is stated on Page 54 of the Plan, transfer continues to be a challenge in Maryland. PGCC intends to change this program from a general studies area of concentration to a standalone AS degree for the specific reason of enhancing successful transfer and eliminating challenges for students. The proposed standalone program is an affordable transfer degree option for students, providing required courses that match the transfer needs of students and align with the freshman and sophomore years of Maryland's public four-year institutions.

After the successful completion of all application steps, each student in this program is given an individual academic degree plan and assigned a college advisor who is specifically trained in the transfer process. This advisor, along with program faculty and staff, will help students navigate through the program and through the transfer process.

Additionally, the curriculum for the program is designed with a multiplicity of educational tools and resources to support the diverse learners at the College. Some courses offered are accessible in both in-person and online formats, which allows ease of access and flexibility to students enrolled in the program. In addition to the online format, some program courses are also offered in a structured remote format (synchronous) to allow greater flexibility to both students and program faculty. Remote tutoring and advising resources are also available for students as an ongoing effort to support and promote program success and timely completion by all students.

Part 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 Associate of Science degree in Chemistry is a transfer degree option that provides graduates with the prerequisite skills to transfer to four-year colleges and universities. STEM and healthcare professionals are in high demand in our community, state, and nation. This program cultivates the highly sought-after critical thinking/problem solving skills necessary to pursue and succeed in STEM and healthcare professions.

The Associate of Science degree in Chemistry is a transfer degree option that provides graduates with the prerequisite skills to transfer to four-year colleges and universities. A Bachelor of Science in Chemistry is the foundation for many STEM and health science careers. Chemists become medical laboratory scientists, technologists in chemistry, pathologist assistants, forensic scientists, biomedical chemists (PhD biomedical chemists research many of the same things that MDs do), Industrial Hygienists, Toxicologists, Physician Assistants, Veterinarians , etc.
https://www.healthcarepathway.com/articles/chemistry-degree-careers/
According to the **Bureau of Labor Statistics**, in 2021, nationally, there were 60,400 associate degree level Chemical Technicians. The table below highlights the projected growth for this occupation https://www.bls.gov/ooh/life-physical-and-social-science/chemical-technicians.htm#tab-6

Occupational Code	Occupational Title	Employment			
		2021	2031	Change	%. Change
19-4031	Chemical Technicians	60,400	63,100	2,700	4%

In the state of Maryland there are not, and there is not projected to be, many opportunities for associate degree level Chemical Technicians. Therefore, the aim is to transfer program graduates to four-year institutions. See the table below:

Occupational Title	Employment			
	2020	2030	Change	%. Change
Chemical Technicians	371.0	407.0	36.0	9.70%

https://www.dllr.state.md.us/lmi/iandoproj/maryland.shtml

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

The Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook, Chemists and Materials Scientists, indicates, nationally, there were 85,400 positions occupied by bachelor's level chemists in 2020 and projects a 7% growth by 2030 to 91,100 positions.

Occupational Code	Occupational Title	Employment			
		2021	2031	Change	%. Change
19-2031	Chemists	85,400	91,100	5,700	7%

https://www.bls.gov/ooh/life-physical-and-social-science/chemists-and-materials-scientists.htm#tab-6 (visited August 12, 2022).

In the state of Maryland there is and will be significant opportunity for bachelor's level chemists (this does not include biochemists).

Occupational Title	Employment			
	2020	2030	Change	%. Change
Chemists	3,163	3,234	71	2.24%

https://www.dllr.state.md.us/lmi/iandoproj/maryland.shtml

Manufacturing (industry code 31-330) will employ 43% of chemists who will be employed. Of these, 35.8% will be employed in chemical manufacturing (325000) and 20% in pharmaceutical and medicine manufacturing (325400). Scientific research and development services (541700) will employ 12.5% of chemists. Federal, state and local governments (900000) will employ 12.1% of chemists. Junior colleges, colleges, universities, and professional schools (610000) will employ 4.2% of chemists (https://data.bls.gov/projections/nationalMatrix?queryParams=19-2031&ioType=o).

The following tables show employment prospects for chemists in Maryland and the surrounding region Maryland are favorable.

The table below shows Maryland, and nearby Delaware and New Jersey are among the five States with the highest concentration of jobs and location quotients in Chemists.

States with the highest concentration of jobs and location quotients in Chemists:

State	Employment	Employment per thousand jobs	Location quotient	Hourly mean wage	Annual mean wage
Delaware	1,300	2.98	5.20	$ 55.07	$ 114,540
New Jersey	7,210	1.87	3.28	$ 48.10	$ 100,050
Massachusetts	4,590	1.35	2.36	$ 51.69	$ 107,510
Maryland	2,980	1.17	2.05	$ 57.78	$ 120,190
North Carolina	4,370	0.99	1.73	$ 37.34	$ 77,670
https://www.bls.gov/oes/current/oes192031.htm#nat					

The table below shows: Maryland, and the nearby District of Columbia, Delaware, and New Jersey are among the five states that pay the highest wages to chemists.

Top paying states for Chemists:

State	Employment	Employment per thousand jobs	Location quotient	Hourly mean wage	Annual mean wage
District of Columbia	270	0.40	0.70	$ 61.76	$ 128,460
Maryland	2,980	1.17	2.05	$ 57.78	$ 120,190
Delaware	1,300	2.98	5.20	$ 55.07	$ 114,540
Massachusetts	4,590	1.35	2.36	$ 51.69	$ 107,510
New Jersey	7,210	1.87	3.28	$ 48.10	$ 100,050
https://www.bls.gov/oes/current/oes192031.htm#nat					

The table below shows Washington-Arlington-Alexandria, DC-VA-MD-WV, is among the ten Metropolitan areas with the highest employment level in Chemists. Washington-Arlington-

Alexandria, DC-VA-MD-WV is, by far, the top paying metropolitan area for Chemists.

Metropolitan areas with the highest employment level in Chemists:

Metropolitan area	Employment	Employment per thousand jobs	Location quotient	Hourly mean wage	Annual mean wage
New York-Newark-Jersey City, NY-NJ-PA	7,820	0.90	1.57	$ 47.37	$ 98,520
Boston-Cambridge-Nashua, MA-NH	4,160	1.61	2.82	$ 52.08	$ 108,330
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	4,130	1.56	2.72	$ 48.92	$ 101,750
Los Angeles-Long Beach-Anaheim, CA	2,880	0.50	0.88	$ 37.74	$ 78,510
Washington-Arlington-Alexandria, DC-VA-MD-WV	2,830	0.97	1.69	$ 63.12	$ 131,290
Chicago-Naperville-Elgin, IL-IN-WI	2,600	0.61	1.07	$ 37.92	$ 78,880
San Francisco-Oakland-Hayward, CA	2,320	1.04	1.81	$ 47.43	$ 98,660
Detroit-Warren-Dearborn, MI	1,460	0.81	1.42	$ 49.87	$ 103,720
Houston-The Woodlands-Sugar Land, TX	1,340	0.46	0.81	$ 48.83	$ 101,570
San Diego-Carlsbad, CA	1,310	0.94	1.64	$ 39.26	$ 81,650

https://www.bls.gov/oes/current/oes192031.htm#nat

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.

The Bureau of Labor Statistics' Occupational Outlook Handbook for Life, Physical, and Social Science indicates, in May 2021, the national median annual wage for chemists was $79,430. Overall employment of chemists is projected to grow 6 percent from 2020 to 2030; this is about as fast as the average for all occupations. About 9,100 openings for chemists and materials scientists are projected each year. Nationally, there are 92,400 jobs directly in the field of chemistry. https://www.bls.gov/ooh/life-physical-and-social-science/chemists-and-materials-scientists.htm

In addition, the American Chemical Society cites more than 100 (non-direct) career fields that a degree in chemistry prepares one for. ((https://www.acs.org/content/acs/en/careers/chemical-sciences.html).

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

According to College Factual.com, the nation graduates about 16,600 bachelor's level chemistry majors annually. collegefactual.com/majors/physical-sciences/chemistry

Many fields employ chemists, and many chemistry majors go on to professional and/or graduate schools. The American Chemical Society (ACS) is the Nation's premier authority on Chemistry informatics. The ACS lists the following, and much more, as what one can do/become with a chemistry degree ((https://www.acs.org/content/acs/en/careers/chemical-sciences.html): Academia: Instrumentation laboratory manager, Laboratory supervisor, Stockroom manager, Laboratory technician, Project manager, Outreach coordinator, Safety officer, Technology transfer (helps academics commercialize research findings), Research Chemist, Computational Chemist; Outside of Academia: Agricultural Chemist, Food Chemist, Flavor Chemist, Nutritional Chemist, Perfume Chemist, Molecular Gastronomist, Soil Chemist, Plant Chemist, Astrochemist; Chemical Biotechnologist, Environmental biotechnologist, Medical and health biotechnologist, Industrial biotechnologist, Agricultural biotechnologist, Biofuels biotechnologist, Marine and aquatic biotechnologist; Chemical Information Specialist (libraries, chemical companies, pharmaceutical companies, market research firms, professional societies, consulting firms, technical and trade publishing houses, software and chemical information databases companies); Chemical technician; Chemistry applied to the arts (documenting, cleaning, preserving, and repairing works of art; authenticating works of art and artifacts; developing pigments, dyes, paints, and coatings; developing polymers, resins, alloys, and composites for sculptures and jewelry-making; developing new materials for stereolithography (3D printing); Improve material properties; develop safety procedures and equipment, materials chemist (solve structural, optical, acoustic, or aesthetic problems, or develop materials with novel properties); Occupational health and safety technician; chemical patent attorney, Chemical law, Environmental law; Crystallographer; Forensic Scientist; Formulation Chemist; Geochemist; Hazardous Waste Manager; Human Resources; Industrial Management; Military Scientist & Technologist; Nanochemist; Nuclear Chemist, Oil & Petroleum Chemist, Personal Care Chemist; Process Chemist; Public Health Chemist; Public Information & Outreach Officer; Quality Assurance & Control Officer; Regulatory Affairs Officer; Industrial Research and Development Chemist, Science Policy, Officer; K-12 Teacher, Social Impact/Activist, Technical Communication/Science Writer; Technical Sales & Marketing Agent; Technical Support Agent; Toxicologist; Water Chemist.

Part 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.

For more information: Institution Program Inventory and Degree Trend Data

According to programs found in the Academic Program Inventory, from its Chemistry - Arts and Sciences Transfer (A.S.) program, Anne Arundel Community College graduates "physical chemistry ready" students. Likewise, Montgomery College offers a Chemistry and Biochemistry Area of Concentration Associate of Science degree from which it graduates "physical chemistry ready" students. Although 33 credit hours of General Education coursework is required (across the state), there are differences in the nature of the courses that may be taken. For example, History of African Americans at PGCC and Ancient and Medieval Western Civilizations at AACC. The English requirement is the same at each institution. General chemistry 1 and 2 with labs, organic chemistry 1 and 2 with labs, calculus 1 and 2, calculus-based physics 1 and 2 with labs are the substance of the major in all three programs. All three programs require one behavioral science course. AACC recommends a course in biology as an elective but does not require it. PGCC and Montgomery college require one course in biology with a lab. Howard Community College does not offer a chemistry degree. PGCC's program will serve the student population in Prince George's County.

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

At PGCC, the Chemistry AS degree is a stronger transfer program than our previous Chemistry AA degree. Students graduating with the CHM AA degree were not ready to take physical chemistry upon transfer; making it nearly impossible for them to obtain a BS in chemistry in a total of four years.

Part E: Relevance to High-demand Programs at Historically Black Institutions (HBIs)

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

The proposed program aligns for transfer with the following programs at HBIs in our area:
Bowie State – Bachelor of Chemistry
Morgan State – Chemistry, B.S. ACS Certification Track and Curriculum Sequence
Howard University - Bachelor of Science in Chemistry (ACS certified)

PART 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.

Prince George's Community College is considered a majority- minority institution. Opportunity exists to articulate with Bowie State, Morgan State, and Howard Universities in transferring PGCC AS graduates (to these three institutions).

PART 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.

Establishment of the Program: PGCC has an established process for curriculum development and revision which is driven by the faculty and overseen by the Office of the Executive Vice-President & Provost for Teaching, Learning & Student Success. Program proposals originate by faculty at the department level. After a proposal is approved by the department chair and division dean, it moves through several steps in the approval process including Assessment Committee, Curriculum Committee, General Education Committee (as applicable) and Executive Vice President & Provost. The final step in the approval process for new programs and substantial modification is from the College's Board of Trustees, before submission to MHEC for approval.
Faculty who will oversee the program: Chair of the Natural Sciences Department Thomas Snowden, Academic Coordinator of Chemistry Nadene Houser-Archield.

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

Graduates of the Chemistry Concentration will be able to:

- Describe the structure of an atom, including components of the nucleus and electron orbitals.
- Predict molecular structures based on atomic composition and patterns of chemical bonding.
- Solve stoichiometric problems based on balanced chemical equations.
- Predict chemical reactivity of atoms and molecules.
- Interpret results of chemical analysis, such as NMR, chromatography, mass spectrometry, etc.
- Apply key concepts from mathematics and biology to solve problems in chemistry.
- Investigate principles of chemistry through experimentation, using the scientific method.
- Report scientific findings using proper terminology and formatting, and in adherence to ethical standards.

3. Explain how the institution will:
   a) *provide for **assessment of student achievement of learning outcomes** in the program*
   b) ***document** student achievement of learning outcomes in the program*

The College's Research, Assessment and Effectiveness (RAE) office manages the assessment cycle and determines when programs are assessed. Course-level assessment is a part of program-level assessment to determine how students are meeting program outcomes. The College uses an all-in-one approach to assessment and assessment instruments are aligned to the course outcomes and peer reviewed by the Teaching, Learning and Assessment Committee (TLAC). The assessment instruments are administered and the data analyzed to generate a Student Learning Outcome Assessment Report (SLOAR) and Program Learning Outcome Assessment Report (PLOAR). The SLOAR and PLOAR are used to develop an action plan including re-assessment and the results are reviewed.

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

PAS-1000: First Year Experience (Institutional Requirement)
Credits: 1
This course assists incoming students in making a successful transition to college. Students focus on those behaviors and attitudes that are needed to achieve academic success. Students learn specific academic success skills/strategies and discover resources that are necessary to succeed in their college courses. Students engage in an exploration of the programs of study offered and design goals for learning that lead to an educational and career/professional plan.

CHM-1020: General Chemistry II (Program Requirement)
Credits: 3
Study of chemical equilibrium relative to gases, heterogeneous systems, weak electrolytes including acids and bases, solubility product studies, kinetics, thermodynamics, electrochemistry, and nuclear chemistry

CHM-1030: General Chemistry II Laboratory (Program Requirement)
Credits: 2
This course introduces a number of modern and classical analytical methods including instrumentation and the computer. Measurement and its error are examined in detail due to the analytical approach taken in the course. We will analyze familiar household products where possible. Some of the experiments expand topics covered in CHM-1020 (kinetics, equilibrium constant, electrochemistry), while others build on topics from CHM-1010.

MAT-2420: Calculus II (Program Requirement).
Credits: 4
This course is the second course in a 3-semester sequence of university level calculus for a variety of majors including, but not exclusive to, science, engineering, and mathematics. This course includes the study of integration techniques for single variable functions, applications of integration, improper integrals and infinite series including Taylor series and their applications.

CHM-2010: Organic Chemistry I (Program Requirement)
Credits: 4
University-parallel organic chemistry sequence. Students will examine structures and nomenclature of the common classes of organic molecules and predict the consequent physical properties, and the nature and mechanisms of their chemical reactions. They will employ instrumental and qualitative analysis techniques to determine structures of organic compounds. They will also employ standard organic chemistry research-lab equipment and methodologies to synthesize, extract, purify, and analyze organic compounds.

PHY-1030: General Physics I (Program Requirement)
Credits: 3
First semester of a three-semester sequence (PHY- 1030, PHY-2030, PHY-2040) for science/engineering transfer students. Calculus-based study of classical mechanics. Topics to be covered include vector math, kinematics, statics, dynamics, work and energy, impulse and momentum, conservation laws, rotational dynamics, hydrostatics, and Newtonian gravity. Students

will develop their abilities to communicate using the technical language of physics, understand physical theories, and apply theories to problems. Science general education class.

PHY-1040: General Physics I Laboratory (Program Requirement)
Credits: 1
This physics laboratory course introduces a number of modern and classical analytical methods including instrumentation and the computer. Measurement and its error are examined in detail due to the analytical approach taken in the course. Experiments expand topics covered in PHY-1030. General education science course.

CHM-2020: Organic Chemistry II (Program Requirement)
Credits: 3
Continuation of CHM-2010 with emphasis on reaction mechanisms, and synthesis of organic compounds.

CHM-2040: Organic Chemistry II Laboratory (Program Requirement)
Credits: 2
Experiments in organic synthesis and analysis of compounds from CHM-2020 with emphasis on microscale experiments and common laboratory and instrumental techniques, including spectroscopy.

PHY-2030: General Physics II (Program Requirement)
Credits: 4
Second semester of a three-semester sequence (PHY PHY-1030, 2030, PHY-2040 for science/engineering transfer students. Calculus-based survey of kinetic theory, thermodynamics, electricity and magnetism, and electromagnetic phenomena. Topics to be covered include fluid dynamics, temperature, heat, heat transfer, kinetic theory of gasses, phase changes, the laws of thermodynamics, heat engines, static electricity, electric forces, potentials and fields, DC circuits, magnetic fields and forces, electromagnetic induction, and Maxwell's Equations. Students will develop their abilities to communicate using the technical language of physics, understand physical theories, conduct laboratory experiments, analyze data, and apply theories to problems.

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

Composition:
EGL-1010: Composition I: Expository Writing (English Composition General Education Requirement)
Credits: 3
University-parallel freshman English. Fundamentals of effective prose writing, including research-based informative, analytical, and argumentative essays.

EGL-1340: Writing About Technical Topics (English Composition General Education Requirement)
Credits: 3
Preparation of various types of technical business, government, and scientific communications, including presentations. Creation of commonly used documents such as letters, memoranda, and résumés, as well as various types of reports such as progress reports, recommendation reports, and proposals. Development of clear, concise, and accurate style for communicating complex information, with emphasis on audience, purpose, and presentation choices. A continuation and extension of the rhetorical principles and composition skills addressed in EGL-1010.

Humanities:

PHL-1090: Introduction to Logic (Arts/Humanities General Education Requirement)
Credits: 3
The elements of logic: how to translate ordinary language into logical form and craft valid arguments.

COM-1090: Interpersonal Communication (Arts/Humanities General Education Elective)
Credits: 3
This foundational study of human communication takes place in a survey course designed to explore everyday relationships in various settings. This course provides foundational awareness of interpersonal communication and engages in skill-building practices to enhance students' capabilities. Students learn the basics of interpersonal communication skills and how they affect one's communication style. Emphasis is placed on communication dynamics and climate and conflict management strategies. Honors version available.

Any Foreign Language Course (Arts/Humanities General Education Elective)
Credits: 3

Mathematics:

MAT-2410: Calculus I (Mathematics General Education Requirement; Critical Course)
Credits: 4
This course is the first course in a three-semester sequence of university-level calculus for a variety of majors including, but not exclusive to, science, engineering, and mathematics. The course is an introduction to single variable calculus: study of limits, continuity, differentiation and its applications, definite and indefinite integrals, and the Fundamental Theorem of Calculus.

Social Sciences:

ECN-1030: Principles of Macroeconomics (Social Science General Education Elective)
Credits: 3
This course explores the factors that impact the overall performance of an economy, by examining aspects of the economy from an aggregate perspective. It focuses on the policies that government pursues in order to achieve price stability, economic growth and full employment. Topics covered include supply and demand analysis, national income accounting, business cycles, aggregate expenditure and aggregate demand and supply models, and fiscal and monetary policy.

ECN-1050: Principles of Microeconomics (Social Science General Education Elective)
Credits: 3
This course teaches the fundamentals of microeconomics and introduces students to the economic way of thinking. It involves an analysis of the economic principles underlying the behavior of individual consumers and business firms. Topics include economic systems, supply and demand analysis, elasticity, externalities, public goods, market structure and antitrust legislation. Students will learn how to use simple mathematical and graphical techniques to analyze choices made by individual economic entities.

HST-1510: History of African Americans to 1877 (Social Science General Education Elective)
Credits: 3
This course surveys African-American history from the beginnings of the Trans-Atlantic slave trade in the colonial era through the end of Reconstruction in 1877. The course examines the social, political, cultural, military, economic, and scientific triumphs and tribulations that African-Americans experienced throughout their early history in the land that has become the United States. Particular emphasis is placed on describing and analyzing black Americans' resistance to inequality, their development of institutions, the expansion of slavery, and the Civil War and Reconstruction.

PSY-1010: General Psychology (Social Science General Education Elective)
Credits: 3
University-parallel introductory course which surveys the field of psychology, including the study of behavior, cognitive processes, the concepts of memory, perception and sensation, consciousness, personality development, psychological disorders, psychotherapy, and social behavior.

SOC-1010: Introduction to Sociology (Social Science General Education Elective)
Credits: 3
Survey of sociological concepts and their application to culture, socialization, social organizations, and social change.

Social Sciences:
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SOC-1010: Introduction to Sociology (Social Science General Education Elective)
Credits: 3
Survey of sociological concepts and their application to culture, socialization, social organizations, and social change.

Computer Literacy:
INT-1010: Introduction to Information Technology (Computer Literacy Institutional Requirement)
Credits: 3
Introduction to Information Technology is a survey course in evolving information technology and its relevance to individuals and society. Students examine the categories of computing devices and different types of computer applications, software and their uses. Emphasis in this course is on enhancing students' skills in data analysis and programming. Additionally, students evaluate ethical principles related to privacy, security, intellectual property and how these apply to their academic and professional life. They also explore strategies to manage risks related to systems security threats. Lastly, students learn about the basic principles of connectivity and data communications.
Students possessing skills and knowledge in this area may receive credit for INT 1010 by passing the department's challenge exam (currently the three Internet and Computing Core Certification tests, known as IC3). Students who are already IC3 certified may receive credit for INT 1010 by presenting their three certificates to the transfer evaluator in the Office of Records and Registration.

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

There are no specialized accreditation or graduate certification program associated with this program.

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

There is no contract with any other institution or non-collegiate organization associated with this program.

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.

Clear, complete, and timely information on the curriculum, course and degree requirements will be posted in the college catalog. Each program has a dedicated page in the college catalog where the program description will be located. The nature of faculty and student interaction, assumptions about technology competence and skills, technical equipment requirements, learning management system, availability of academic support services are located in the course syllabus, college catalog or the Learning Management System. Financial aid resources, costs and payment policies are located on the college website under "Paying For College".

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

The PGCC Office of Communications and Marketing will create brochures, flyers and electronic marketing (e-marketing) materials necessary to promote and advertise the program to potential students. The Office of Communications and Marketing department provides communications materials that create awareness and visibility to efforts to promote the program both internally and externally. The internal process of creating recruitment and advertising materials follows the internal process used by the Office of Communications and Marketing. The information regarding prior learning can be found on the College website: Transfer Credit Policies and Procedures

PART H: Adequacy of Articulation

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

For more information: Transfer Agreements and Articulation Agreements

American College of Education:
ACE will collaborate with PGCC to provide a seamless transfer experience of credits from PGCC AA, AAS, AS, and AAT programs. Partnership grants are also available. ACE Articulation Agreement

Argosy University
Argosy University/Washington, DC (AU/DC) agrees to accept into its Bachelor of Arts degree completion program students with a cumulative GPA of 2.0 or higher who have completed the Associate of Arts (AA) or Associate of Science degree from PGCC. Argosy University Articulation agreement

Bowie State University
A qualifying student may transfer from Prince George's Community College into Bowie State University for the completion of certain programs, including Biology, A.A. Bowie State University will

accept credits towards completion of each degree program on the following Program Crosswalks: Biology, Business Administration, Computer Science, Criminal Justice, Nursing, Psychology, and Sociology. Bowie State University Articulation Agreement

The Catholic University of America's Metropolitan College
The Catholic University of America's Metropolitan College accepts applications from students who wish to transfer from Prince George's Community College (PGCC) into any baccalaureate degree program at Metropolitan College. Transferring PGCC applicants must meet the same admissions criteria set forth for other students applying for transfer. The application fee is waived. PGCC Students who graduate with an A.A. or and A.S. degree, who have earned at least 24 semester hours of transferable work at PGCC, and who have a PGCC GPA of at least 2.5 are guaranteed admission to Metropolitan College.CUAMC Articulation Agreement

Excelsior College
Excelsior will recognize toward an appropriate Excelsior baccalaureate degree, as determined by Excelsior, up to 90 (or more) applicable academic credits awarded to PGCC students for work completed in a PGCC program toward a PGCC associate degree or recognized by PGCC for work completed by its students at other institutions and accepted by it toward a PGCC degree. EC Articulation Agreement

Fisk University
Fisk and PGCC have an agreement for transfer to Fisk University and the following baccalaureate degree programs for holders of an AA or A.S. Degree of: 1. Biology, 2. Business Administration, 3. Computer Science, 4. Psychology, and 5. Sociology. Students accepted to either program shall pay tuition and/or students' financial aid qualifications/scholarship shall be accepted for payment when available; Students will complete a minimum of 54 credit hours to complete the undergraduate degree program. Fisk University Agreement

The George Washington University
A Guaranteed Admission Agreement ("Agreement") is established between The George Washington University ("GW") School of Medicine and Health Sciences at the Virginia Science and Technology Campus ("SMHS"), and Prince George's Community College ("PGCC"). PGCC students with Associate of Arts, Associate of Arts and Sciences, Associate of Applied Arts, Associate of Applied Science, Associate of Science, or Associates of Science in Engineering, Associates of Arts in Teaching who have completed each course with a grade of C or higher and graduated with a cumulative PGCC GPA of 2.75 as well as an overall GPA of 2.75 (as shown on the PGCC transcript) may transfer into the Bachelor of Science in Health Sciences ("BSHS") at GW. GWU Articulation Agreement

Georgetown University
A PGCC student with a high standard of personal conduct who earns an associate degree with at least 60 credits, and with a GPA of 3.0 or above is guaranteed admission to Georgetown University's Bachelor of Arts in Liberal Studies Program. Georgetown University Articulation Agreement

Hood College
An Enrollment Agreement between PGCC and Hood College is established. PGCC students who have graduated with an AA/AS/AAT with a 2.5 GPA are guaranteed admission if they are eligible. To be

eligible a student must submit the appropriate transfer application, official transcripts from all post-secondary institutions attended, and meet the general transfer requirements as outlined in the Hood College Catalog. PGCC students who transfer to Hood College and enroll full-time will receive a PGCC scholarship in the amount of $500 per semester. Students who transfer to Hood prior to graduating may apply for a reverse transfer of credit to complete their associate degree. Hood College Articulation Agreement

Howard University
PGCC students with a minimum cumulative GPA of 2.50 may transfer to Howard University. Up to 60 credits of courses in which they have earned grades of "C" or better may transfer. In addition, the student must meet the specific transfer matriculation and course grade requirements of the school or college at Howard they desire to transfer to. Howard University Articulation Agreement

Kaplan University:
PGCC associate degree graduates and students eligible to graduate are "pre-qualified" applicants for admission. They become transfer students when they sign the KU enrollment agreement. Block transfer of up to 60 credits is possible for some PGCC programs. PGCC graduates who haven't filled KU prerequisites must complete them at KU. **Kaplan University Articulation agreement**

Morgan State University:
PGCC graduates/transfers of the Associate of Arts General Studies Program with an area of Concentration in Chemistry at PGCC may transfer and pursue a program leading to the Bachelor of Science degree in Chemistry. A maximum of seventy (70) credit hours from PGCC will be allowed. All courses meeting general education requirements at PGCC will transfer to MSU as general education. Other general education requirements will be met by using required or elective courses at MSU. **MSU Articulation Agreement**

Stevenson University:
Under this agreement students who graduate from Prince George's Community College with an AA or AS and a GPA of 2.5 and above, the student will be automatically admitted to Stevenson University. Students are also qualified for a 20% Tuition reduction per credit hour. **Stevenson University Articulation Agreement**

St. Mary's College:
PGCC students graduating with an Associate of Arts in General Studies with Area of Concentration in Chemistry who 1. submit their applications at least 6 months prior to the start of the semester they wish to begin, 2. have completed CHM 1010, 1020, 1030, 2010, 2020 and 2040, and MAT 2410 and 2420, and PHY 1030, 1040, and 2030, 3. Have a cumulative GPA of 2.0 or better, and 4 satisfy all other SMCM admissions requirements, are eligible to transfer into the SMCM Chemistry program. Only classes with grades of C or better will transfer.
St Marys College Chemistry Articulation Agreement

Strayer University
Strayer guarantees admission to any PGCC student who has earned 24 or more credits with a 2.0 or above average. Strayer will transfer in an AA/AS or AAT/AAS degree program in its entirety for a

student enrolling in a related degree program; grades of D will transfer. However, for a transfer with less than the associate degree, D's will not be accepted. Strayer University Articulation agreement

University of Baltimore:
After the completion of PGCC coursework, the University of Baltimore in general will accept up to 63 PGCC credits (some of their programs may accept up to 70 credits). In addition to this normal type of transfer agreement, the BeeLine Dual Admission Program allows students to be dually admitted at both institutions. **UNIV BALT Articulation Agreement**

University of Maryland, College Park:
UMD College Park and PGCC will continue the Maryland Transfer Advantage Program, which guarantees UM admission to PGCC transfers (even without an AA/AS degree) contingent on specific requirements. Students who complete at least 15 credits at PGCC with a minimum 3.0 GPA (or completion of an associate's with a 3.0) will be accepted into UM. **UM College Park Agreement**

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

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

Only program courses have to be included (required and elective). Institutional requirements and general education courses do not need to be included.

In the last column, do not list any courses outside of this program.

Faculty Name	*Appointment Type*	*Terminal Degree*	*Academic Title/Rank*	*Status*	*Course(s) Faculty Member will teach in this Program*
Lynne Heighton	Tenure-track	Ph. D Chemistry	Professor	Full-time	**CHM-1020:** General Chemistry II; **CHM-1030:** General Chemistry II Laboratory
Nadene Houser-Archield	Tenure-track	Ph. D Chemistry	Professor	Full-time	**CHM-2010:** Organic Chemistry I; **CHM-2020:** Organic Chemistry II;

					CHM-2040: Organic Chemistry II Laboratory
William Miller	Tenure-track	Ph. D Chemical Engineering	Professor	Full-time	**CHM-1020:** General Chemistry II; **CHM-1030:** General Chemistry II Laboratory
Reyniak Richards	Tenure-track	M.S. Chemistry	Assistant Professor	Full-time	**CHM-2020:** Organic Chemistry II; **CHM-2040:** Organic Chemistry II Laboratory; **CHM-2010:** Organic Chemistry I; **CHM-1020:** General Chemistry II; **CHM-1030:** General Chemistry II Laboratory
Noelle Vargas	Tenure-track	Ph. D Chemistry	Professor	Full-time	**CHM-1020:** General Chemistry II; **CHM-1030:** General Chemistry II Laboratory
Nilanthi Yasapala	Tenure-track	Ph. D Chemistry	Associate Professor	Full-time	**CHM-1020:** General Chemistry II; **CHM-1030:** General Chemistry II Laboratory; **CHM-2020:** Organic Chemistry II;

					CHM-2040: Organic Chemistry II Laboratory; **CHM-2010:** Organic Chemistry I
Markar Dombalagian,	Contract	Ph. D Chemistry	Instructor	Adjunct	**CHM-2040:** Organic Chemistry II Laboratory
Nirmal Pahadi	Contract	Ph. D Chemistry	Instructor	Adjunct	**CHM-2010:** Organic Chemistry I
David Simpson	Contract	Ph. D Applied Physics	Instructor	Adjunct	**PHY-1030:** General Physics I
Neeharika Thakur	Tenured	Ph. D Physics	Professor	Full-time	**PHY-1030:** General Physics I; **PHY-1040:** General Physics I Laboratory; **PHY-2030:** General Physics II
Rocco Mennella	Tenure-track	M.S. Mathematics	Professor	Full-time	**PHY-2030:** General Physics II; **MAT-2420:** Calculus II
Helen Mirtova	Tenured	Ph. D Applied Mathematics	Professor	Full-time	**MAT-2420:** Calculus II
Svetlana Konnova	Tenure-track	Ph. D. Physics	Associate Professor	Full-time	**MAT-2420:** Calculus II
Jaison Novick	Tenure-track	Ph. D Mathematics	Associate Professor	Full-time	**MAT-2420:** Calculus II
Kourosh Tavakoli	Tenure-track	Ph. D Mathematics	Professor	Full-time	**MAT-2420:** Calculus II
Peggy Beck	Tenured	M.S.	Professor	Full-time	**MAT-2420:** Calculus II

		Mathematics			
Rufus Elemo	Contract	Ph. D, Petroleum Engineering	Instructor	Adjunct	**MAT-2420:** Calculus II
Paul Arnold	Contract	M.A. Mathematics	Instructor	Adjunct	**MAT-2420:** Calculus II

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

   b. The learning management system

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

The College provides opportunities for continuous teaching improvement through ongoing training for full- and part-time faculty year-round on a variety of evidence-based best practices related to:

- pedagogy to meet the needs of a diverse student population, using a variety of modalities
- pedagogy specific to distance education
- the learning management system (Canvas)

Concentrated training is offered during professional development periods in August, October, and January.

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

1. Describe the **library resources** available and/or the measures to be taken to ensure resources are adequate to support the proposed program.

The library maintains online accessible and extensive databases, journals, and E-texts. Students may request holdings and inter-library loans either by email or in person. Additionally, the library will provide journals and publications specifically related to the various professions in the field.

The PGCC library has extensive online resources available to students, including:

- Agriculture (Gale OneFile)
- Chemical Educator
- CRC Handbook of Chemistry & Physics
- Environmental Studies (Gale in Context)
- Environmental Studies and Policy (Gale OneFile)
- Gardening and Horticulture (Gale OneFile)
- Informe Académico (Gale OneFile)
- Journal of Chemical Education
- Journal of Forensic Sciences
- Salem Science
- Encyclopedia of Global Warming, Environmental Issues, and Forensic Science

- Science
- Streaming Video Films on Demand VAST Academic Video Collection

Moreover, the library has ready access to:

a) Interlibrary loan services compliant to and in support of the Library of Congress and its Bibliographic Utilities.

b) The holdings of the Prince George's County Memorial Library System.

c) The holdings of the University of Maryland System.

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

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.

1. 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:

This program will mainly be housed in Chesapeake Hall. Current buildings, classroom and office spaces, and teaching and learning equipment are sufficient to support this program. All facilities and equipment are subject to routine cleaning, inspection, and maintenance.

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*

Prince George's Community College provides access to it electronic mailing system (Microsoft 365 Outlook) to its full-time and part-time faculty members. Each faculty member's school email address uses the domain @pgcc.edu. Faculty receive emails from both students and colleagues via the Outlook system. Students enrolled in credit programs are issued a school email address upon enrollment. Each Prince George's Community College student email address uses the domain @students.pgcc.edu.

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

Each course offered at the College is created in a Canvas shell that allows remote access during a given semester. Each faculty member, full-time or part-time, is given access to each class that he/she is assigned to teach via the Canvas Learning Management System (LMS). Within the learning management system, faculty are able to see who is enrolled in the course, create a gradebook, create discussion boards, upload various content formats, and communicate with individual or groups of students. Zoom is integrated into each Canvas course through an LTI (learning tools integration). Panopto is integrated into each Canvas section through as LTI to ensure student privacy as well as provide streaming technology in accordance with the best practices for video.

After successfully enrolling in a course at Prince George's Community College, each student is provided access to each course that he/she is enrolled for the given semester. Access to the course is granted four days prior to the official start of the course. Within the learning management system, students can access all course content posted by the instructor, access graded assignments, and communicate with the instructor and other students.

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

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

TABLE 1: PROGRAM RESOURCES

Resource Categories	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
1. Reallocated Funds	$ 0	$ 0	$ 0	$ 0	$ 0
2. Tuition/Fee Revenue (c + g below)	$212,520	$255,990	$299,460	$342,930	$386,400
a. Number of F/T Students	30	35	40	45	50
b. Annual Tuition/Fee Rate	$4,830	$4,830	$4,830	$4,830	$4,830
c. Total F/T Revenue (a x b)	$144,900	$169,050	$193,200	$217,350	$241,500
d. Number of P/T Students	35	45	55	65	75
e. Credit Hour Rate	$161	$161	$161	$161	$161
f. Annual Credit Hours	12	12	12	12	12
g. Total P/T Revenue (d x e x f)	$67,620	$86,940	$106,260	$125,580	$144,900
3. Grants, Contracts & Other External Sources	$ 0	$ 0	$ 0	$ 0	$ 0
4. Other Sources	$ 0	$ 0	$ 0	$ 0	$ 0
TOTAL (Add 1 – 4)	$212,520	$255,990	$299,460	$342,930	$386,400

Reallocated Funds: There are no reallocated funds for this program.
Tuition/Fee Revenue: Assuming modest growth in both full-time and part-time enrollments, and tuition and fees are assumed constant over the next five years, the chart displays the overall financials. The in-county tuition rate of $114 per credit and a fee of $47 per credit for a total of $161 per credit have been used to calculate revenue; with 30 credits per year for full-time students, and an average of 12 credits per year for part-time.
Grants, Contracts, & Other External Sources: This program does not use grants, contracts, or external sources for funding.
Other Sources: There are no other sources for funding.

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

TABLE 2: PROGRAM EXPENDITURES					
Expenditure Categories	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
1. Faculty (b + c) below	$ 0	$ 0	$0	$0	$0
a. Number of 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. Number of 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. Number of FTE	0	0	0	0	0
b. Total Salary	$ 0	$ 0	$ 0	$ 0	$ 0

c. Total Benefits	$ 0	$ 0	$ 0	$ 0	$ 0
4. Technical Support and 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	$ 0	$ 0	$ 0	$ 0	$ 0
TOTAL (Add 1 – 7)	$ 0	$ 0	$0	$0	$0

Faculty:
No new faculty are needed for this program. There are a number of qualified full-time and adjunct faculty currently employed by the College to teach General Education and required program courses in the specific disciplines.

Admin Staff:
This program will be housed in the Natural Sciences Department, which already has a dean, associate dean, department chair, and coordinator in place who will support the program.

Support Staff:
This program will be housed in the Natural Sciences Department. Office associates support the department, and not individual programs, so it is not expected that any new support staff will be needed.

Technical Support and Equipment:
The college currently owns and maintains the standard equipment and software needed to teach undergraduate chemistry: gas chromatographs, digital polarimeters, drying oven, UV visible spectrophotometers, visible spectrophotometers, digital barometers, fume hoods, rotary evaporator, FT 13C and 1H NMR, FT IR, centrifuges, analytical balances, mass spectrometer, molecular drawing software, spectral simulator, computational chemistry software, etcetera. Aside from periodic equipment updates no additional equipment, software or personnel are needed. The current full-time and part-time chemical stockroom staff, and fulltime Information Technology staff will support the new program.

Library:
Current library materials are sufficient for the needs of the students and faculty.

New or Renovated Space:
There is no new or renovated space needed for this program. Current classroom space is sufficient for the needs of the students and faculty.

Other Expenses:
There are no additional expenses for transitioning to the new program.

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

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

Prince George's Community College has identified three sets of learning outcomes for its students: course, program, and the College's Core Competencies (institutional learning outcomes). Course outcomes define the skills, knowledge, and values that students are expected to acquire upon completion of a course. Program outcomes specify the skills, knowledge, and values that students are expected to acquire upon completion of a program of study. The College has a rigorous course and program assessment process. Course assessment takes place by using embedded tests and assignments that address specific course outcomes. Data from these course-embedded assessments are publicly distributed every semester in the Student Learning Outcomes Assessment Report (SLOAR). An additional report showing student achievement of the Student Core Competencies is published every year and analyzed to improve courses and to ensure program learning outcomes are met. This is the Program Learning Outcomes Assessment Report (PLOAR.)

Non-tenured faculty members are evaluated yearly by students and administrators. Each year, non-tenured faculty members have their course material and student evaluations assessed by their department chairs and deans, with final verification of the assessment conducted by the Executive Vice President and Provost for Teaching, Learning and Student Success. In order to receive high evaluations, faculty members must demonstrate effective teaching above all, but professional development in the discipline and participation in departmental, divisional, and college-wide activities are also assessed. The same criteria for evaluation are carried out for tenured members of the faculty, but once every four years. The above assessment process also provides administrators the opportunity to set out action plans for faculty improvement in teaching, professional development, and/or college service in order for each or any of those facets of the faculty member's career to be enhanced.

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.

Complete program assessment takes place every four years, with progress toward achievement of improvement plans being evaluated every two years. Data regarding enrollment, retention, and graduation are collected and analyzed against program outcomes, courses offered, and other variables. Each program must have an advisory board consisting of professionals in the field assist in the construction and analysis of program review data. The college has a five-year program review cycle which entails program's educational effectiveness, including assessments of student learning outcomes, student retention, student and faculty satisfaction, and cost-effectiveness.

PART 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 and success, and the institution's cultural diversity goals and initiatives.

Prince George's Community College provides affordable, high-quality learning experiences that support personal, professional, and educational development for diverse populations, contributing to

the economic equity and cultural vibrancy of our community. The mission of Prince George's Community College is compatible with the State's minority achievement goals. The College provides accessible and affordable education, and it is committed to diversity. With a majority African American student body and a significant Hispanic/Latino student population, Prince George's Community College is well positioned to provide opportunities for students traditionally underrepresented in higher education. Moreover, the graduates of this program will further align with the racial makeup of the region's workforce. The College will continue to recruit a diverse student base from both public and private schools and the local community. In addition to working with and relying on the college's student recruiting professionals, additional activities to recruit a diverse body of students will include:

- involvement with community-based organizations, high schools, and teen church programs;
- increased visibility of the new programs (e.g. college Website and catalog); and
- clear communication about the integrated nature of the academic work with practical experience and professional networking opportunities.

In sum, the College will continue to engage with community partners and stakeholders who represent the diversity of the region.

PGCC has a Diversity, Equity and Inclusion office and a number of programs geared to special populations, including Diverse Male Student Initiatives (DMSI), Women of Wisdom (W.O.W.), and Vocational Support Services. Additionally, interactive workshops and cultural diversity events are available on an ongoing basis at both the main campus and the extension centers. Furthermore, a Truth, Racial Healing, and Transformation (TRHT) Campus Center organizes Listening Sessions and Racial Healing Circles. Each of these initiatives focuses on improving the retention and success of minority students.

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

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

This is a new program. Therefore, a low-productivity self-analysis is not applicable here.

PART 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.

Prince George's Community College is eligible to provide Distance Education by the Maryland Higher Education Commission (MHEC). Please see File 22293.

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

Prince George's Community College provides assurance that programs that are offered in a distance format comply with current CRAC guidelines. Please find a copy of the institution's accreditation status for offering distance learning through MSCHE at the following link: https://www.msche.org/institution/0175/. The college also participates in the National Council for State Authorization Reciprocity Agreements (NC-SARA) as evidenced on the following link: https://nc-sara.org/directory.

The program offers the following courses in a distance learning format:
First Semester:
PAS-1000: First Year Experience
MAT-2410: Calculus I
EGL-1010: Composition I: Expository Writing
INT-1010: Introduction to Information Technology
MAT-2420: Calculus II
EGL-1340: Writing About Technical Topics
PHL-1090: Introduction to Logic
COM-1090: Interpersonal Communication
CHM-2020: Organic Chemistry II
ECN-1030: Principles of Macroeconomics
ECN-1050: Principles of Microeconomics
HST-1510: History of African Americans to 1877
PSY-1010: General Psychology
SOC-1010: Introduction to Sociology