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

Institution Submitting Proposal	

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

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

Payment Submitted:	Yes No	Payment Type:	R*STARS # Check #	Payment Amount:	Date Submitted:

Department Proposing Program	
Degree Level and Degree Type	
Title of Proposed Program	
Total Number of Credits	
Suggested Codes	HEGIS: CIP:
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:
Provide Link to Most Recent Academic Catalog	URL:

Preferred Contact for this Proposal	Name:
	Title:
	Phone:
	Email:

President/Chief Executive	Type Name:
	Signature: *Falecia D Williams* Date:
	Date of Approval/Endorsement by Governing Board:

Revised 1/2021

January 6, 2023
In response to 22695 originally submitted December 15, 2022

Dear Dr. Fielder,

Prince George's Community College is requesting the addition of a new program, Data Science and Analysis Certificate program, a new stand-alone certificate. The new proposed codes are as follows: HEGIS: 5101.01; CIP: 30.7001.

Proposed Program Description
The Data Science and Analysis certificate equips students with the technical and analytical skills to collect, clean, analyze and present data. Students use industry- standard programming languages and technology tools to create and present data analytics, predictive models, and visualizations. They also hone their communications skills and learn strategies for effective data presentation. All courses in the program are cross-listed with continuing education.
Proposed Program Outcomes
Graduates of Data Science and Analysis Certificate program will be able to:
1. Apply a variety of information technology concepts and tools to the management of files and large data sets.
2. Analyze data using appropriate programming languages and environments for data science.
3. Create reports and visualizations to communicate the findings of complex analyses.
Proposed Courses
INT-1010: Introduction to Information Technology (3 credits; Program Requirement)
INT-1111: Programming Logic and Design (3 credits; Program Requirement)
INT-2140: Problem Solving with Spreadsheets (3 credits; Program Requirement)
INT-2080: Fundamentals of Database Management (3 credits; Program Requirement)
INT-2180: Data Mining, Manipulation and Analysis (3 credits; Program Requirement)
INT-2280: Data Visualization and Communication (3 credits; Program Requirement)
Total Proposed Number of Credits: 18

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,

Dr. Clayton Railey
EVP and Provost of Teaching, Learning, and Student Success
Prince George's Community College
301 Largo Rd
Largo, MD 20774
301-546-0406
raileyrca@pgcc.edu

1. **Name of Proposed Certificate/Degree Program:** Data Science and Analysis Certificate

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](#).

   > Data science is an in-demand field that is transforming our lives by democratizing data and revolutionizing strategic and critical decisions made by businesses. The Data Science and Analysis certificate program prepares students with the necessary knowledge base and useful skills to tackle real-world data analysis challenges. They will acquire the skills needed to make data-driven decisions to support business requirements. They will learn to work with datasets and databases; prepare data for analysis; analyze data through use of appropriate statistical methods; and present the results of their analysis using appropriate visualizations. All courses in the program are cross-listed with Continuing Education.
   >
   > The program supports PGCC's mission, which is to provide high-quality, transformative learning experiences that enrich lives and empower students to earn credentials leading to personal development, professional advancement, and economic prosperity. The Data Science and Analysis certificate program is committed to quality through curriculum and workforce alignment, program assessment, faculty evaluations and student feedback through evaluations. It has the power to be transformative by leading to lucrative jobs for our graduates, and by creating a highly skilled workforce for the 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](#)

   > PGCC's vision statement sees the institution as the region's premier center for dynamic teaching and learning, strategic partnerships, and community engagement that advances knowledge, economic equity, and lifelong personal development. The vision is supported through the implementation of a program that provides affordable, high-quality learning experiences that lead to well-paying jobs for our graduates as well as a trained data science workforce for our community.
   > Student success is the underlying foundation of all planning at Prince George's Community College. Additionally, the program supports regional impact by providing students with opportunities to

complete real-world projects that lead to jobs in the region. It also fosters organizational excellence by building upon existing capabilities to offer a credential in a sought-after field.

The PGCC Strategic Plan linked above includes strategic goals that shape the future of the College and objectives and outcomes to measure success and the thoughtful strategies outlined to achieve those goals.

The Data Science and Analysis certificate program aligns closely to the following College strategic goals, as evidence that it aligns with institutional priorities:

Goal 2: Optimize Pathways to Graduation, Transfer, or Entering the Workforce.

Strategy: Align degrees, certificates, credentials, and curriculum development to career pathways and industry sectors congruent with high wage, **high** demand occupations.
Goal 4: Reimagine Workforce Innovations and Strategic Partnerships

Strategy: Create and embed opportunities for students to complete marketable workforce experiences and earn reputable credentials synchronously with the completion of a certificate or degree
Most of the courses in the Data Science and Analysis certificate program prepare students for in-demand industry certifications. Additionally, all courses in the program are cross-listed, offering maximum flexibility to students seeking credentials either for college credit or through continuing education.

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 this newly proposed program will be funded through the annual operating budget for Teaching, Learning, and Student Success. This new program will not require any additional expenditures outside those that are offset by increased tuition revenue from projected enrollment in the program (details are provided in Part L – Table 1). The program consists of four existing courses and two new courses that have already been developed by faculty who currently support the department. There are no new costs for equipment, instructional supplies, facilities, or staff. The program as is proposed can be fully staffed with both current full-time and adjunct faculty and staff to support its operations. Initially no additional expense will be incurred; however, additional faculty would be hired as necessitated by growth in enrollment (details are provided in Part L – Table 2.)

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

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

The proposed certificate in Data Science and Analysis has the necessary support at the department, division, and institutional level to operate successfully. The Technology, Engineering, and Construction 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. While all courses in the program can be taught by existing faculty, the department intends to additional faculty positions by year three to help implement the program (see Part L –

Table 2 for further details), which serves as evidence of PGCC's commitment to ensuring the success of this new certificate program.

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 space in the Center for Advanced Technology (CAT) 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

The data science industry is undergoing a transformation to using a software-oriented approach with Application Programming Interfaces (API) and automation. This change is driven by the ever-increasing complexity and size of computer programs due to new connections such as web services, as well as a need to deliver more agile software services. This change requires a new software-oriented skillset that complements existing programming skills.

The Data Science and Analysis certificate provides students with necessary skills to meet the demands of the modern software application. The courses in this program teach students the best practices of modern software development practices and DevOps, to understand and learn how to securely use APIs, and how to automate development using those APIs.

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 2018, about 60% of Prince George's County residents identify as black and approximately 20% as Hispanic. The Data Science and Analysis certificate program will allow the College to expand the opportunities available to its service population by providing a certificate program that provides students with skills that are relevant to the ever-changing technology industry.

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

The Data Science and Analysis certificate program is a unique technology program because it is the only program in the region to align itself with a number of in-demand industry certifications that lead to lucrative jobs. This program option allows Prince George's Community College to expand its capacity as a minority serving institution to offer unique and diverse technology programs to its students. PGCC is in the planning stages to offer a Data Science AAS program, which, if approved, would build on this proposed certificate as well.

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

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 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 52 of the Plan, institutions should be rethinking their focus on traditional 60-credit associate's degrees and incorporating more "stackable credentials" that allow students to build unique portfolios of skills and knowledge in less time and for a lower cost. The courses in this certificate program represent concrete, measurable outcomes that translate into skills that will assist students in obtaining gainful and meaningful employment. All six courses are also cross-listed with continuing education (non-credit), and will allow students to ear industry credentials along the way.

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.

This new program also aligns with **Priority 7**: Enhance the ways postsecondary education is a platform for ongoing lifelong learning.

Through successful completion of the course work in this certificate program, students will learn data analysis and interpretation skills and tools that will serve them in many aspects of their lives and help them to develop as contributing and engaged members of the local, state, national, and world communities (page 56 of the Plan.)

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.

Graduates of this program will be eligible to work in any industry that involves computer programming or testing. Data analysts and scientists are the backbone of all organizations today. From education to healthcare, all industries rely on data analysts and scientists to operate successfully. This program introduces graduates to the new skills in programming and applications.

These skills are required of entry to mid-level software engineers depending on prior experience. According to https://lightcast.io/ and www.economicmodeling.com. Data analysts and scientists are the most sought-after job role in the computer software industry. Implementing and applying data mining, data modeling, visualizing, interpreting, and reporting data finding and data storytelling is a top skill needed by a technology organizations and companies today.

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 https://lightcast.io/ and www.economicmodeling.com, data analysts and scientists are the most sought-after job role in the computer software industry. Implementing and applying data mining, data modeling, visualizing, interpreting, and reporting data finding and data storytelling is a top skill needed by a technology organizations and companies today.
There are currently 330,692 software related job available nationally and over 50,000 of those in the DC, Maryland and Virginia area.

Reference- Lightcast Q3 2022 Data Set @ www.economicmodeling.com

According to the Bureau of Labor Statistics, information technology careers are some of the fastest growing occupations, 2018 and projected 2028. For the state of Maryland, the table below highlights the projected growth.

OCC Code	Occupational Title	Employment			
		2018	2028	Change	% Change
15-1253	Software Quality Assurance Analysts and Testers	9,275	12,906	3,631	39.1%
15-1243	Data Warehousing Specialists	2,461	4,002	1,541	62.6%
15-2051	Clinical Data Managers	2,751	5,106	2,355	85.6%

15-1243	Database Architects	2,461	4,002	1,541	62.6%
11-3021	Computer and Information Systems Managers	17,370	19,674	2,304	13.2%

Lightcast Q3 2022 Data Set | www.economicmodeling.com and
https://drive.google.com/file/d/1YQeHy93ZuSoJ7SIIBC-hIZu_RNIlp939/view?usp=sharing

The following information technology careers rank among the top 15 the fastest-growing occupations in Prince George's County: Software Quality Assurance Analysts and Testers, Data Warehousing Specialists, Clinical Data Managers, Database Architects, Computer and Information Systems Managers.

https://drive.google.com/file/d/1YQeHy93ZuSoJ7SIIBC-hIZu_RNIlp939/view?usp=sharing

For Washington DC, similar trends exist. For a projection up to 2028, out of the top 50 high- wage careers, information technology careers hold ten positions. The following list highlights the careers, education requirements and median salary for some of those positions:

- Software Quality Assurance Analysts and Testers - Median Hourly Earnings- $49.93 Some college, no degree

- Data Warehousing Specialists - Median Hourly Earnings - $57.09 Bachelor's degree

- Clinical Data Managers - Median Hourly Earnings - $56.75 Bachelor's degree

- Database Architects - Median Hourly Earnings - $57.09 Bachelor's degree

- Computer and Information Systems Managers - Median Hourly Earnings - $81.96 Bachelor's degree

https://drive.google.com/file/d/1YQeHy93ZuSoJ7SIIBC-hIZu_RNIlp939/view?usp=sharing

Also see Appendix A which lists Data Science in the US Bureau of Labor Statistics projections for fastest-growing occupations.

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.

According to O*NET OnLine:

- 26% of the jobs in the occupation code for software quality assurance analysts and testers (15-1253.00) will require an associate's degree, and 50% will require a Bachelor's degree (https://www.onetonline.org/link/summary/15-1253.00).
- 4% of the jobs in the occupation code for data warehouse specialist (15-1243.01) will require a high school diploma or equivalent, and 78% will require a Bachelor's degree (https://www.onetonline.org/link/summary/15-1243.01).
- 5% of the jobs in the occupation code for clinical data manager (15-2051.02) will require an associate's degree, and 85% will require a Bachelor's degree (https://www.onetonline.org/link/summary/15-2051.02).
- 4% of the jobs in the occupation code for database architect (15-1243.00) will require an associate's degree, and 58% will require a Bachelor's degree (https://www.onetonline.org/link/summary/15-1243.00)
- 26% of the jobs in the occupation code computer and information systems manager (11-3021.00) will require some college, but no degree, and 48% will require a Bachelor's degree (https://www.onetonline.org/link/summary/11-3021.00).

Employees in these five occupations usually need several years of work-related experience, on-the-job training, and/or vocational training. Considerable preparation is needed.

According to the Bureau of Labor Statistics, national employment in 2021 across the occupations of:

- Software quality assurance analysts and testers (15-1253.00) measured in number of employees was 196,300. By 2031, this is projected to grow by 21% (much faster than average), to 237,100, with 19,500 job openings. In Maryland, 2020 employment was 43,680, and is projected to grow by 23% by 2030, to 53,720 employees, with 4,520 annual job openings (https://www.onetonline.org/link/localtrends/15-1253.00?st=MD).
- Data warehouse specialists (15-1243.01) measured in the number of employees was 52,700. By 2031, this is projected to grow by 10% (faster than average), to 58,100, with 4,300 job openings. In Maryland, 2020 employment was 5,120, and is projected to grow by 10% by 2030, to 5,620, with 440 annual job openings (https://www.onetonline.org/link/localtrends/15-1243.01?st=MD).
- Clinical data managers (15-2051.02) measured in the number of employees was 113.300. By 2031, this is projected to grow by 36% (much faster than average), to 153,900, with 13,500 job openings. In Maryland, 2020 employment was 2,330, as is projected to grow by 31% to 3,050, with 260 annual job openings (https://www.onetonline.org/link/localtrends/15-2051.02?st=MD).
- Database architects (15-1243.00) measured in the number of employees was 52,700. By 2031, this is projected to grow by 10% (faster than average), to 58,100 with 4,300 job openings. In Maryland, 2020 employment was 5,120, and is projected to grow by 10% by 2030, to 5,620, with 440 annual job openings (https://www.onetonline.org/link/localtrends/15-1243.00?st=MD).
- Computer and information systems managers (11-3021.00) measured in the number of employees was 509,100. By 2031, this is projected to grow by 16% (much faster than average), to 591,500, with 48,500 job openings. In Maryland, 2020 employment was

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

Maryland currently offers six lower division certificates in the data science and analysis-related field across six community colleges and universities. These programs graduated a total of 20 students between 2014 and 2021 according to trend data from MHEC (see below). This is well below the projected national and state of Maryland job openings for the data-related positions shown in Part C-3 above.

Supply of Graduates from Comparable Maryland Lower Division Certificate Programs

Institution	Program Name (CIP)	2014	2015	2016	2017	2018	2019	2020	2021
Allegany College of MD	Data Analytics (30.7101)	-	-	-	-	-	-	-	-
Capitol Technology U.	Programming and Data Management (11.0101)	1	0	0	0	0	0	0	0
Carroll Comm. College	Data Science (30.7001)	-	-	-	-	-	-	-	-
Harford Comm. College	Data Science (30.7001)	-	-	-	-	-	-	-	-
Howard Comm. College	Data Business Analytics (52.1301)	-	-	-	-	-	-	-	-
Montgomery College	Data Science (52.1301)	-	-	-	-	0	2	10	7

Source: MHEC Trends in Degrees and Certificates by Program 2014-2021, published March 2022

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 the Maryland Higher Education Commission's (MHEC) Academic Program Inventory, several other community colleges and universities in Maryland offer lower division certificates in either data analytics, data science, or another closely-related data field.

Allegany College of Maryland offers a 30-credit certificate in Data Analytics that is designed to enable students to seek employment in the field upon completion. Similarities in courses between this program and PGCC's proposed program include courses in data analytics/analysis and data visualization. Allegany's program requires courses in machine learning, python, and data warehouse implementation that PGCC does not. Alternately, PGCC requires courses in programming logic and design, and problem solving with spreadsheets that Allegany does not. Allegany's certificate program also includes three general education courses.

Anne Arundel Community College offers two certificates in Computer Information Systems-Database Administration, and Computer Science-Database Development. These programs contain courses focused on database administration, management and development, but not analysis.

Capitol Technology University offers a 12-credit certificate in Programming and Data Management. The only course similarity to PGCC's proposed program is database management. The focus of this program

is to provide students with an understanding of how program managers store and manage computer data.

Carroll Community College offers a 23-credit certificate in Data Science that prepares students for immediate professional placement in the field. Similar courses in both programs include programming, data analysis, and Excel (equivalent to PGCC's course problem solving with spreadsheets.) PGCC's program requires fundamentals of database management, and data visualization and manipulation, while Carroll's program does not. Conversely, Carroll's program requires courses in Access and statistical methods.

Harford Community College offers a 20-credit certificate in Data Science for students wanting to increase their data literacy and/or prepare for a career in data science. This program requires courses that are similar to what PGCC requires, including data analysis, database management, and data visualization. Harford's program also requires courses in python programming language, ethics, and introductory statistics that PGCC does not require for this proposed program/ PGCC requires programming and logic design, and problem solving with spreadsheets, which are not required in Harford's program.

Howard Community College offers and 18-credit certificate in Data Business Analytics that develops student skills in data mining, data visualization, data interpretation, and data storytelling. This program requires courses similar to PGCC, such as data analytics and data visualization. However, the remaining courses in Howard's program are more focused on business topics: Business analysis for decision-making, project management, and business communications. Howard's program also requires introduction to python, which is not required in PGCC's proposed program.

Montgomery College offers a 16-credit certificate in Data Science that provides students with experience in the field of data science including such areas as data management, data analysis, data collection, and data visualization. The only course required that is similar to what PGCC requires is data visualization and communication. Montgomery's program requires two courses in statistics and a capstone experience that are not required in PGCC's proposed program.

Although comparable certificate programs exist at other community colleges in Maryland, PGCC's is unique for its close alignment with workforce needs through industry certifications, and this program will serve the students in prince George's County.

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

According to a 2019 article, "Demand for IT Pros in Washington Metro Continues to Outpace Supply" by Lindy Kyzer. IT, data science and cyber, has boasted a 0% unemployment rate for the past several years… The numbers show the mismatch in number of applicants to positions will remain an issue through at least 2021. The number of tech positions is growing, and while the number of STEM graduates is increasing (the U.S. reported 568,000 STEM graduates in 2015) – the number of job openings outpaces supply. There are currently over 50,000 open software jobs in the DC, Maryland and Virginia areas." This program will help fill the need for trained professionals in this area.

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**.

> PGCC does not anticipate that this program will have any impact on the implementation or maintenance of high-demand programs at HBIs. However, a number of such institutions, listed below, offer the possibility of articulation agreements with PGCC's Data Science and Analysis certificate program.
>
> The mission and strategic goals of Coppin State University (CSU) are programmed towards educating all students, especially African American and minority student populations. They currently offer a Data Science Bachelor of Science degree.
>
> Bowie State University has a data analytics initiative which includes creating new courses and integrating the data science and analytics modules into existing courses. This could eventually lead to an undergraduate certificate in data science and analytics.
>
> The Department of Information Sciences and Systems at the Graves School of Business at Morgan State University is preparing a proposal to offer a master of science in data analytics and visualization.

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.

> While Prince George's Community College is considered a majority- minority institution, opportunity exists to collaborate with Coppin State University, Bowie State or Morgan State University on articulation discussions.

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 or substantial modification is from the College's Board of Trustees, before submission to MHEC for approval.
>
> *Faculty who will oversee the program:*
> Dr. Mohammed Ali, Chair and Professor, Technology, Engineering & Construction Department

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

The objective of the proposed Data Science and Analysis certificate program is to equip students with the technical and analytical skills to collect, clean, analyze, and present data. Students use industry-standard programming languages and technology tools to create and present data analytics, predictive models, and visualizations. They also hone their communications skills and learn strategies for effective data presentation. All courses in the program are cross-listed with continuing education. The proposed program learning outcomes are as follows:

Graduates of the Data Science and Analysis Certificate program will be able to:

1. Apply a variety of information technology concepts and tools to the management of files and large data sets.
2. Analyze data using appropriate programming languages and environments for data science.
3. Create reports and visualizations to communicate the findings of complex analyses.

Many of the concepts, skills, and technologies in this program are best learned in an in-person, collaborative environment with a hands-on approach. For this reason, the program will be primarily face-to-face. Two of the courses are also offered in an online modality.

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

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

INT-1010: Introduction to Information Technology (Program 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.

INT-1111: Programming Logic and Design (Program Requirement)
Credits: 3
This course is an introduction to computer programming concepts with an emphasis on structured logic and design. Procedural and object-oriented concepts are introduced in this course and students use a variety of software packages to develop flowcharts and pseudo-code. This course does not address a particular programming language, but rather emphasizes problem solving techniques that can be applied to programming in any language. Examples from various programming languages may be used to illustrate concepts. This course contains a lab component and students acquire hands-on skills and practical applications of data validation and internal and external program documentation.

INT-2140: Problem Solving with Spreadsheets (Program Requirement)
Credits: 3
Problem Solving with Spreadsheets is a comprehensive course using electronic spreadsheet software with an emphasis is on managing workbook options and settings as well as creating advanced formulas, macros, charts, and tables. Using Microsoft Excel, students solve problems and analyze financial and other data. In addition, students effectively present data from spreadsheets in charts. This course helps prepare students for Microsoft Office Specialist certification exams.

INT-2080: Fundamentals of Database Management (Program Requirement)
Credits: 3
Fundamentals of Database Management gives students a solid foundation in the fundamental concepts of relational database management. Students are introduced to database architecture, data migration and recovery, high availability techniques, database performance tuning, and basic database security tasks. Students will be able to install and configure relational database server and also run queries to retrieve data from the database. Upon completion of this course, students will be prepared to take Oracle's MySQL Database Professional exam.

Two new courses have been created to achieve the stated program objectives and outcomes:

INT-2180, Data Mining, Manipulation and Analysis (Program Requirement)
Credits: 3
This course is an introduction to the concepts of data analysis with an emphasis on using data to drive decision-making in a business environment. It covers data mining and manipulation, querying databases, descriptive and inferential statistics, data analytics tools and data visualization. Additionally, students learn important data management and quality control concepts. Upon completion of this course, students will be prepared to take CompTIA's vendor neutral Data + exam. This course may be taken as a Continuing Education course.

INT-2280, Data Visualization and Communication (Program Requirement)
Credits: 3
This course covers techniques of data visualization for the purpose of communicating the insights gained from data analysis to facilitate business decision-making. Students learn to organize data for visualization, create different types of visualizations as required by the data set, combine multiple visualizations into interactive dashboards and using tools such as embedding and publishing to share visualizations with a wider audience. This course may be taken as a Continuing Education course.

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

As a certificate program, this program does not have any general education requirements.

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.

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](#)

> This program does not have any articulation agreements with programs at partner institutions, but provides opportunities for articulation agreements with several area institutions as previously stated.

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*
Ali, Mohammed	Tenure-track	Ed.D. in Organizational Leadership (Instructional Technology-Concentration)	Professor	Full-time	INT-1111: Programming Logic and Design
Bartlebaugh, Bridget	Tenured	M.Ed., Business Education	Professor	Full-time	INT-1010: Introduction to Information Technology; INT-2140: Problem solving with Spreadsheets
Besharatian, Hossein	Tenure-track	D.S, Computer Science	Professor	Full-time	INT-1010: Introduction to Information Technology; INT-2180: Data Mining,

					Manipulation and Analysis; INT-2280: Data Visualization and Communication
Choudhury, Joy	Tenure-track	MBA, Economic Policy Management	Associate Professor	Full-time	INT-1111: Programming Logic and Design; INT-1010: Introduction to Information Technology; INT-2180: Data Mining, Manipulation and Analysis; INT-2280 Data Visualization and Communication
Elebute, Kunle	Tenure-track	Ph.D. Information Technology	Associate Professor	Full-time	INT-1111: Programming Logic and Design INT-1010: Introduction to Information Technology; INT-2080: Fundamentals of Database Management
Koumadi, Koudjo	Tenure-track	Ph.D. Information and Communications Engineering	Professor	Full-time	INT-1111: Programming Logic and Design
Ogunlana, Kolawole	Tenure-track	DSc. Computer Science	Assistant Professor	Full-time	INT-2080: Fundamentals of Database Management; INT-1010: Introduction to Information Technology;

					INT-1111: Programming Logic and Design
Cameron-Allen Tammy	Contract	B.A. Individualized Studies/Concentration in Cybersecurity	Instructor	Adjunct	INT-1010: Introduction to Information Technology; INT-2140: Problem Solving with Spreadsheets

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.*

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a. The **Teaching and Learning Center (TLC)** at Prince George's Community College (PGCC) is dedicated to supporting the needs of our faculty and students by providing quality resources and professional development opportunities to promote best practices in teaching and learning. The TLC, which was recently started in July 2021, hosts an internal Canvas site, that houses resources such as videos, articles, asynchronous training, and links to various educational sites for more support. Resources in this area include Open Educational Resources (OERs), strategies to engage students, ways to integrate technology, collaborative learning, inquiry-based learning, writing to learn, and more.

The TLC works with various organizations to provide pedagogical resources and training for all faculty members. The College has partnerships with MAGNA Publications, the National Institute for Staff and Organizational Development (NISOD), the Association of College and University Educators (ACUE), University of Maryland, Baltimore County (UMBC) and the Online Learning Consortium (OLC). All of these organizations support institutions of higher education in addressing needs of the faculty and students. The professional development includes presentations on active-learning, Hy-Flex teaching, assessment, course design and delivery, higher-order thinking, and leadership, just to name a few.

Various workshops and cohort groups are held regularly in-person and online to support faculty. The topics of the presentations vary but all support effective teaching and learning practices for higher education. Recent areas included:

- Game-based Learning
- Active-Learning
- Open Educational Resources
- Peer Mentoring

PGCC also provides professional development support for faculty through conferences, on and off-campus. Faculty self-select attendance at professional, university, and college workshops. Annually the college hosts two full-day professional development conferences. The workshops focus on best practices in higher education, active-learning strategies and high-impact practices.

b. To support training with the Learning Management System (LMS), the TLC works with internal partners such as eLearning to host Canvas presentations (Canvas is PGCC's LMS). Internal and external support is provided to train faculty on various aspects of the LMS and how it can be used to support student success. Workshops include, creating accessible assignments, engaging students, adding rubrics, using polls and more. The college consistently provides professional development to increase the knowledge and use of other technologies linked to our LMS, such as Voice Thread, and Panopto.

c. PGCC has various tools in place to support our students and faculty as they learn and teach at a distance. The College offers Structured Remote Training and Online Express Prep to support the faculty in the course design and delivery of online courses. Beyond this, PGCC works with Quality Matters to provide professional development for faculty that teach asynchronously to make sure best practices are used in online teaching. Another form of professional development that supports best practices for distance education is the course from the Association of College and University Educators (ACUE). These courses support evidence-based teaching practices that include, creating an inclusive and supportive learning environment, promoting active learning online, and designing learner centered courses just to name a few. PGCC also partners with the Online Learning Consortium (OLC) which is known for promoting best practices for distance learning. At PGCC, we offer faculty professional development for teaching in a Hy-Flex format. This training teaches ways to include and engage all students, while promoting best practices in online instruction.

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:

Databases
The listed databases are specific to the research topics for Data science. Each database has scholarly journals, peer-review articles, academic resources, and industry resources.
- Computer Science Database
- GALE ONEFILE Computer Science

General Databases
The listed databases are not specific to data science, but include academic resources and information related to data science and analytics.

- ProQuest
- Academic OneFile

Ebooks
- O'Reilly
  - Resources for industry certifications, technical books, Programming, and data science tools
- Ebsco Academic Ebook Collection
  - Computer Science category
- Ebook Central

Journals
The library has 701 academic journals on or about data science and analytics available from the library databases listed above.

Streaming Videos
- Films on Demand: Computer Science and Information Technology
  - Videos related to data science, analytics, and big data

PART 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.

This program will mainly be housed in the Center for Advanced Technology. 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.

Prince George's Community College has sufficient classroom and office space to accommodate the program. The Center for Advanced Technology (CAT) will provide an educational environment that will allow the college to enhance and grow its curriculum. The venue will include the following:

- 25 classrooms with computer labs to include the following specialized instruction labs (average seating capacity 26):
  - Cisco CCNA
  - Engineer Technology Lab
  - Engineering Lab
  - A+ Troubleshooting Lab
  - Computer Graphics / Multimedia Lab
- 4 classrooms without lab (average seating capacity 24)
- 2 open computer labs with various types of workstations and collaboration spaces (35 computers each)
- 2 study labs (average seating capacity 10)
- 27 faculty work spaces

- 2 conference rooms
- 1 certification testing center

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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 its 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)	$67,620	$135,240	$202,860	$270, 480	$338,100
a. Number of F/T Students	10	20	30	40	50
b. Annual Tuition/Fee Rate	$4,830	$4,830	$4,830	$4,830	$4,830
c. Total F/T Revenue (a x b)	$48,300	$96,600	$144,900	$193,200	$241,500
d. Number of P/T Students	10	20	30	40	50
e. Credit Hour Rate	$161	$161	$161	$161	$161
f. Annual Credit Hour Rate	12	12	12	12	12
g. Total P/T Revenue (d x e x f)	$19,320	$38,640	$57,960	$77,280	$96,600
3. Grants, Contracts & Other External Sources	$ 0	$ 0	$ 0	$ 0	$ 0
4. Other Sources	$ 0	$ 0	$ 0	$ 0	$ 0
TOTAL (Add 1 – 4)	$67,620	$135,240	$202,860	$270,480	$338,100

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 for the program. 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 used 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: EXPENDITURES

Expenditure Categories	Year 1	Year 2	Year 3	Year 4	Year 5
1. Faculty (b + c below)	$ 0	$ 0	$74,063	$74,063	$74,063
a. # FTE	0	0	1	1	1
b. Total Salary	$ 0	$ 0	$55,000	$55,000	$55,000
c. Total Benefits	$ 0	$ 0	$19,063	$19,063	$19,063
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	$ 0	$ 0	$ 0	$ 0	$ 0
8. TOTAL (Add 1 – 7)	$ 0	$ 0	$74,063	$74,063	$74,063

Faculty: The program as is proposed can be fully staffed with both full-time and adjunct faculty and staff to support its operations. Initially no additional expense will be incurred; however, additional faculty would be hired as necessitated by growth in enrollment. The funds listed in Table are the anticipated average salary and benefits for a new assistant professor in technology for years 3-5.
Admin Staff: This program will be housed in the Technology, Engineering and Construction 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 Technology, Engineering and Construction department. Office associates support the department as a whole, and not individual programs, so it is not expected that any new support staff will be needed.
Technical Support and Equipment: Existing resources will be sufficient to support the 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 other expenses required or needed for this 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:
INT-1010: Introduction to Information Technology
INT-1111: Programming Logic and Design

Appendix A – Projected fastest-growing occupations, 2020-2030

US Bureau of Labor Statistics

Table 1.3A Fastest growing occupations, 2020 and projected 2030, excluding occupations with above average cyclical recovery[1] (Numbers in thousands)

2020 National Employment Matrix title	2020 National Employment Matrix code	Employment, 2020	Employment, 2030	Employment change, 2020-30	Percent employment change, 2020-30	Median annual wage, 2021[2]
Total, all occupations	00-0000	153,533.80	165,413.70	11,879.90	7.7	$45,760
Wind turbine service technicians	49-9081	6.9	11.7	4.7	68.2	$56,260
Nurse practitioners	29-1171	220.3	335.2	114.9	52.2	$120,680
Solar photovoltaic installers	47-2231	11.8	17.9	6.1	52.1	$47,670
Statisticians	15-2041	42	56.9	14.9	35.4	$95,570
Physical therapist assistants	31-2021	93.8	126.9	33.2	35.4	$61,180
Information security analysts	15-1212	141.2	188.3	47.1	33.3	$102,600
Home health and personal care aides	31-1120	3,470.70	4,600.60	1,129.90	32.6	$29,430
Medical and health services managers	Nov-11	429.8	569.4	139.6	32.5	$101,340
Data scientists and mathematical science occupations, all other	15-2098	63.2	83	19.8	31.4	$100,480
Physician assistants	29-1071	129.4	169.5	40.1	31	$121,530
Epidemiologists	19-1041	7.8	10.2	2.3	29.6	$78,830
Logisticians	13-1081	191	247.3	56.4	29.5	$77,030
Speech-language pathologists	29-1127	158.1	203.5	45.4	28.7	$79,060
Animal trainers	39-2011	60.2	77.4	17.2	28.5	$31,280
Computer numerically controlled tool programmers	51-9162	27.1	34.5	7.4	27.4	—
Genetic counselors	29-9092	2.4	3.1	0.6	26.2	$80,150
Crematory operators and personal care and service workers, all other	39-9098	80.5	100.5	19.9	24.8	$29,610
Operations research analysts	15-2031	104.1	129.7	25.6	24.6	$82,360
Actuaries	15-2011	27.7	34.5	6.8	24.5	$105,900
Health specialties teachers, postsecondary	25-1071	242.7	301.6	58.9	24.3	$102,720
Forest fire inspectors and prevention specialists	33-2022	3	3.7	0.7	23.9	$42,600
Interpreters and translators	27-3091	81.4	100.7	19.3	23.7	$49,110
Athletic trainers	29-9091	30	37	7	23.4	$48,420
Respiratory therapists	29-1126	135.1	166.2	31.1	23	$61,830
Substance abuse, behavioral disorder, and mental health counselors	21-1018	327.5	402.6	75.1	22.9	$48,520
Food preparation and serving related workers, all other	35-9099	71.2	87.4	16.2	22.8	$29,120
Nursing instructors and teachers, postsecondary	25-1072	72.6	88.9	16.3	22.4	$77,440
Woodworkers, all other	51-7099	9.5	11.6	2.1	22.2	$35,610
Phlebotomists	31-9097	129.6	158.4	28.8	22.2	$37,380
Software developers and software quality assurance analysts and testers	15-1256	1,847.90	2,257.40	409.5	22.2	—

Footnotes:

[1] Data excludes occupations that had a decline in wage and salary employment greater than the decline for all occupations from 2019 to 2020 (approximately 6%). These excluded occupations may have fast growth rates that do not reflect structural growth but only cyclical recovery.

[2] Data are from the Occupational Employment and Wage Statistics program, U.S. Bureau of Labor Statistics. Wage data cover non-farm wage and salary workers and do not cover the self-employed, owners and partners in unincorporated firms, or household workers.

Note: Data is unavailable for values denoted with a ''—''.

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