



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

Institution Submitting Proposal	
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*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 <small>(must be 60 days from proposal submission as per COMAR 13B.02.03.03)</small>			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: <i>Jermine J. Williams</i>	Date:	
			Date of Approval/Endorsement by Governing Board:		



OFFICE OF THE PRESIDENT

March 1, 2023

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

Dear Dr. Fielder:

Montgomery College respectfully requests approval of the following academic program action:

**Creation of the business analytics associate of arts, CIP 52.1301,  
HEGIS 5199.19, effective fall 2023.**

Montgomery College is prepared to offer the new business analytics associate of arts. The 60-credit program provides an excellent opportunity for students wanting to increase their data literacy, improve their marketability, and/or prepare for a career in the business analytics field. It is also suitable for those who wish to advance their professional careers by supplementing their work experience or an existing college or graduate degree with business analytics knowledge. The new program will be implemented with existing institutional resources.

The associated fee of \$850 for a new academic program will be sent to the Maryland Higher Education Commission via U.S. mail.

Thank you for your time and consideration of this request. Please contact Dr. Carolyn Terry, associate senior vice president for academic affairs, at [carolyn.terry@montgomerycollege.edu](mailto:carolyn.terry@montgomerycollege.edu) or 240-567-4226 if you have questions.

Sincerely,

A handwritten signature in black ink that reads "Jermaine F. Williams".

Jermaine F. Williams, Ed.D.  
President

**Montgomery College**  
**Business Analytics Associate of Arts**

**A. Centrality to Institutional Mission and Planning Priorities:**

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

Montgomery College is prepared to offer the new business analytics associate of arts effective fall 2023. The business analytics associate of arts is designed to meet the growing demand for highly skilled professionals with analytics expertise. The 60-credit program provides an excellent opportunity for students wanting to increase their data literacy, improve their marketability, and/or prepare for a career in the business analytics field. It is also suitable for those who wish to advance their professional careers by supplementing their work experience or an existing college or graduate degree with business analytics knowledge. The program grounds students in general business courses, including economics and accounting, and builds essential skills in business analytics, statistics, scripting languages, data visualization, and applied decision-making. Students gain hands-on experience using Excel, R, Tableau, and SQL in business analytics to summarize, analyze, and visualize data. The business analytics program is designed for students planning to transfer to a four-year college and major in business analytics.

Montgomery College will request statewide designation for the associate of arts under separate cover. Such designation will increase accessibility to the degree and expand the College's ability to educate for this in-demand skill set.

This program supports Montgomery College's [mission](#), which is to empower our students to change their lives, to enrich the life of the community, and to hold ourselves accountable. Montgomery College is serving the needs of our students and our community by training competent professionals to help meet the diverse needs of our citizens and community while also addressing the needs of Montgomery County, the state of Maryland, and beyond. Furthermore, the business analytics program holds itself accountable through curriculum and workforce alignment, program assessment, faculty evaluations, and student feedback through course evaluations.

Montgomery College's [vision statement](#) focuses on both academic excellence, opportunity, and student success. This vision characterizes the institution as both agile and relevant as it meets the dynamic challenges facing our students and community. The vision is supported through the implementation of the business analytics degree that leads to well-paying jobs for Montgomery College graduates as well as a workforce adeptly trained in analytics.

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

Student success is at the heart of all planning at Montgomery College. The College's [2025 strategic plan](#) is a five-year working document that includes strategic goals that shape the future of the College and objectives and outcomes to measure success. Every program at the College aligns to one or more goals in the strategic plan. The business analytics program aligns to the following College strategic goals:

**Goal I: Empower Students to Start Smart and Succeed.** The newly-developed business analytics associate of arts provides students with a pathway for completing the required coursework for successful transfer to a four-year institution. It also allows students the flexibility to tailor their program to their area of interest or chosen transfer institution. Student

success is enhanced through the availability of open educational resources, z-course options, on-campus career recruitment events, community partnerships to encourage internship opportunities, and individual advising for students. The goal of the new program is to provide students a seamless transition to a bachelor's program while providing exposure to business analytics coursework and career opportunities early in their academic program.

**Goal III: Fuel the Economy and Drive Economic Mobility.** Students enrolled in the new business analytics program will be provided with opportunities to gain experiential and community learning, including real-world projects, internships, mentorships, and joint learning spaces. The business analytics associate of arts includes 29 credits of discipline-specific coursework. Part of the discipline coursework includes a 2-credit semester-long capstone project (BSAN 250) that allows students to work with local government and/or industry partners through the use of real-world data. A combination of academic and practical instruction, collaboration with local business partners, and use of industry-standard best practices provides students with the knowledge and skills necessary for success in the profession.

**Goal IV: Build, Engage, and Strengthen Community Partnerships.** Through organized, strategic, and culturally responsive efforts, the business analytics program will provide students with opportunities to engage with experts and working professionals in the field of business analytics. Through curricular and extracurricular activities, students, faculty, and college partners will develop resources and a broad network of people that will support the program's learning community.

**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.)**

The proposed business analytics associate of arts will be implemented with existing institutional resources from the Business, Economics, Accounting, and Computer Applications department, along with resources from the Mathematics, Statistics, Data Science and Computer Science department. Four full-time faculty, three administrative staff, and one support staff are sufficient to meet the requirements of the new program. No additional resources or faculty are needed at this time.

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

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

Montgomery College has a commitment to excellence and innovation, and College leadership is supportive of cutting-edge, relevant programs. This program proposal is proceeding with the full support of the department chair, dean, and provost under whom the program was developed. The program also has the full support of the offices of the senior vice president for academic affairs and Montgomery College president, as well as the Board of Trustees.

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

This academic proposal is proceeding with the full support of the department chair, dean, and provost under which the program was developed. The program also has the full support of the offices of the senior vice president for academic affairs, the Montgomery College president, as well as the Board of Trustees.

Montgomery College has a commitment to excellence and innovation and the administration is supportive of cutting-edge programs. The College collaborates with business and industry leaders, WorkSource Montgomery, and Lightcast Data to determine Montgomery County's workforce needs and how the influx of Montgomery College students will impact the County's

economy. As a result of this needs assessment, the business analytics program is an integral part of Montgomery College's strategic plan. The College's current and forecasted operational budgets include funding for the administrative, financial, and technical support for the new program; Section L includes forecasted resources and expenditures for the program.

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

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

**a) The need for the advancement and evolution of knowledge**

The business analytics associate of arts provides students with entry-level knowledge and skills for immediate employment and a firm foundation for continuing their education to the bachelor's level and beyond. Individuals with a business analytics associate of arts can find entry-level employment performing quantitative analysis for business functions (operations, accounting/finance, marketing, human resources, etc.) and in operations research. A report from Burning Glass Technologies and hosted by EMSI, [\*After the Storm: The Jobs and Skills that Will Drive the Post-Pandemic Recovery\*](#), February 2021, listed advanced analysts among the country's fastest growing roles. High demand skills essential for graduates entering analytic fields include: analytical skills, analyzing data, managing data, and communicating data. The report also notes that employers are willing to pay a premium for professionals with expertise in these areas: "... the new insights provided by big data analytics are reshaping what organizations know and how they can act on that insight. Data science and analytics skills will be prized across sectors."

**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**

Montgomery College has a stellar track record of reaching and supporting minority and disadvantaged populations. The list below includes a sample of the College's many programs and outreach efforts that expand educational opportunities for underrepresented populations and that through transfer opportunities help strengthen and expand the capacity of Maryland's HBIs:

- [Combat2College](#) provides veterans, active-duty service members, and reservists with specialized academic support, resources, and services.
- The [Federal TRIO program](#) is a grant-funded program designed to help students from disadvantaged backgrounds remain in school until graduation or transfer to a four-year college or university.
- The [Challenge Program](#) offers courses to help adults with developmental disabilities function more independently at home, at work, and in the community.
- [ACES \(Achieving Collegiate Excellence and Success\)](#) helps historically underrepresented populations earn a baccalaureate degree. This program is a collaboration of Montgomery County Public Schools, Montgomery College, and the Universities at Shady Grove.
- [Boys to Men \(BTM\)](#) is a mentoring program aimed specifically at the retention of men of color at Montgomery College by providing an open space for members to express their interests, values, and beliefs and connect with members of the Montgomery College community to build a network.

- The [MC Mentoring Network](#) includes mentoring programs such as:
  - a. the [Advancing Latino Male Achievement \(ALMA\)](#) which provides holistic academic and personal guidance, support, and development for Hispanic/Latino/Native American males;
  - b. the [International Buddy Program](#) which offers support to students classified as immigrants, non-immigrants, or F-1/International Visa holders; and
  - c. the [Mentoring Project for Women](#) which targets cross cultural, African American, and Latina first year and continuing students.

2. **Provide evidence that the perceived need is consistent with the [2022 Maryland State Plan for Postsecondary Education](#).**

Montgomery College strategies follow the Commission’s plan for postsecondary education with the goal of enabling students to be successful in their educational pursuits with less debt. The following opportunities and services provide an improved student experience and facilitate degree completion of the business analytics associate of arts:

**Priority 1:** Study the affordability of postsecondary education in Maryland. Evaluate the success of financial assistance programs. Consider innovative and alternative ways to keep postsecondary education affordable (without compromising high-quality education).

**Evidence:** Montgomery College is addressing affordability in relation to the business analytics associate of arts by working cooperatively with other Maryland schools to ensure transferability to four-year institutions, specifically to Smith School’s bachelor in operation management and business analytics. Montgomery County students who earn the business analytics associate of arts and then transfer to the Smith’s School to complete the bachelor’s degree save approximately \$12,180 in tuition.

**Priority 2:** Examine and improve financial literacy programs for students and families to encourage financial planning to pay for postsecondary education. Educate all students on how to best pay for college prior to enrollment. Identify, initiate, and implement programs and initiatives to provide professional development regarding financial literacy to all student touch-points (such as faculty, high school counselors and academic advisors), not just staff in traditional financial aid offices.

**Evidence:** Counselors and faculty will provide academic advising to students in the business analytics degree and emphasize for students the academic and financial benefits of pursuing the associate’s degree at Montgomery College. Scholarship information will be widely shared via the Montgomery College website, specialty programs, and student club activities.

**Priority 3:** Analyze and improve systems that inform and evaluate a student’s academic readiness for postsecondary education. Support dual enrollment opportunities. Support career exploration opportunities in middle school and career preparation during high school, such as youth apprenticeships and programs that utilize federal funding. Engage with recent high school graduates and young adults to better identify barriers to access.

**Evidence:** Montgomery College is planning upcoming events to widely introduce the business analytics associate of arts to students in the Montgomery County Public School (MCPS) system via the College’s well-established [Dual Enrollment program](#). This program allows qualified students to be fully admitted and enrolled at Montgomery College while completing high school. As part of the College’s business Political Action Committee with MCPS, Montgomery College provides information sessions, campus tours, and special activities for middle-and-high school students. For example, a business analytics “boot camp” is currently being planned for spring 2023. During spring break, high school students may enroll in a week of hands-on learning

activities related to learning basics of business analytics and degree options at Montgomery College.

The most recent [2022 Maryland State Plan for Postsecondary Education](#) lists several strategies to meet the goals of access, success and innovation to support student success with less debt. In addition to the outreach to high school programs, business analytics faculty will continue to pursue pathways for students to earn an associate's degree at Montgomery College and then transfer to a four-year university for successful completion. Please see Section H.1 for further information.

**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.**

A defining characteristic of the 21<sup>st</sup> century is the imperative for data-informed decision making. Business analytics is a subset of the broader field of data science. Both involve data collection, modeling, and insights gathering. Business analytics focuses specifically on the study of business data to improve decision-making. Students studying business analytics develop critical thinking, analytical, technical, and communication skills. Accordingly, organizations are hiring employees with the hard skills needed to create high quality business analytics products and the soft skills critical both to effectively communicate information resulting from the analysis of data while considering the ethical implications of those products. The business analytics program is designed to meet the growing need for the highly skilled professionals who can keep pace with the demand for business analytics expertise.

The curriculum provides resources that are applicable and relevant for students entering business analytics careers in business, industry, government or not-for-profit entities. As discussed previously, completion of the business analytics associate of arts at Montgomery College provides the minimum college credits and curricula required to apply to many entry-level positions (operations researcher, data analyst). Continuation through the bachelor's and master's levels open opportunities for mid-level positions (business analyst, analytics director) and high-level positions (chief analytics officer) that require bachelor and master degrees, respectively.

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

Demand for business analysts can be inferred from the broader field of data science. According to Montgomery College's [EMSI data](#) on the [data science program page](#), there are 553 filled positions for data scientists in Montgomery County with a projected job growth of 2.4 percent over the next year. The salary range for a data scientist in Montgomery County is \$77,971 to \$182,416, with a median salary of \$124,074.

There were 130 open job postings in December 2022 and 145 job postings for November 2022. The Employment tab estimates a projected job growth of 14.5 percent over the next seven years for data scientists in the County.

[ZipRecruiter.com](#) (retrieved November 11, 2022) reports that individuals working in business analytics in the Rockville/Gaithersburg area are making on average \$102,273 per year. This amount is \$3,102, or three percent, more than the national average annual salary of \$99,171. Maryland ranks number 6 out of 50 states nationwide for business analytics job salaries.

**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 five years.**

Increased use of business analytics is transforming business practices in manufacturing, resale, and service industries, as well as the public sector. Demand for business analytics talent is projected to continue to grow as organizations turn to data to make key decisions. EMSI data in Section C.2 shows a growing need for professionals in the region for business analytics occupations. The following sources reiterate the anticipated need for employees in the data science field:

- According to the [Bureau of Labor Statistics](#), nationally, employment of operations research analysts is projected to grow 23 percent from 2021 to 2031, much faster than the average for all occupations with about 10,300 openings for operations research analysts projected each year over the decade and a median salary of \$82,360. Many of those openings are expected to result from the need to replace workers who transfer to different occupations or exit the labor force, such as to retire.
- [Glassdoor](#) ranks business analysts in the top 36 positions for 2022 in the Best Jobs in America list at a median wage of \$81,556 with 15,238 open positions nationwide in 2022. Data analyst is ranked 35 at a median wage of \$74,224 with 13,657 open positions nationwide.
- The U.S. Bureau of Labor Statistics employment projection from 2020 to 2030 for the [2020 Fastest Growing Occupations](#) shows data scientist and mathematical science occupations as the number nine occupation with a median annual wage of \$100,480 and growth rate of 31 percent.

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

The projected number of graduates for the new business analytics associate of arts is provided in the following table. The projection is built upon time-to-degree and graduation data for the business administration associate of arts. The initial enrollment for fall 2023 is estimated at 30 students. New enrollments are expected to increase at a rate of 30 percent per academic year for the next two years, dropping to 20 percent in the fourth year, and then 12 percent thereafter. Anticipated time-to-degree is four years, with a 28 percent graduation rate.

	Year 1	Year 2	Year 3	Year 4	Year 5
Projected Graduates	0	0	0	17	19

**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.**

Numerous business and data analytics programs exist throughout the State of Maryland, though Montgomery College’s business analytics associate of arts is unique:

- Howard Community College has a [lower division certificate](#) in data business analytics develops student skills in data mining, data visualization, data interpretation, and data storytelling. This certificate is ideal for students looking to 1) increase their data literacy, 2) prepare for a career in business (data) analytics in any field, and/or 3) advance their careers or improve their marketability.



- Bowie State University has a [bachelor of science](#) in business administration with data analytics concentration. This degree is for business administration majors studying data analytics who are preparing to become tomorrow's leaders in this fast-growing field. Problem-based learning is the foundation of each course, providing students with a high-impact, experiential education that positions them for success.
- Capitol Technology University of Maryland has a [master's in business analytics and data science](#) and a [doctor of business analytics and data science](#). The programs provide the student an academic environment to support the development of high-level critical thinking and leadership skills as they relate to management and decision sciences, to develop high-level decision science technical skills, and to provide doctoral level research experience allowing innovative and practical contributions to the management and decision sciences body of knowledge.
- Coppin State University has a [bachelor's degree](#) in data science that prepares students to interpret business data in the 21<sup>st</sup> century, to compete in the marketplace with combined business and data science skills, and to apply these insights to answer business questions and solve business problems.
- Frostburg University has a [post-baccalaureate business analytics certificate](#) designed to provide a pathway for those who are seeking to develop additional skills and knowledge for the purpose of career advancement and marketability.
- Johns Hopkins University has a [master of science](#) in business analytics and risk management to help students gain the tools and knowledge to analyze information and improve decision making in business settings. It also has a [post-baccalaureate certificate](#) in data analytics and policy to provide students with foundational skills in statistical analysis and the opportunity to develop expertise in a specialty area – including advanced statistics, geospatial analysis, political behavior and public policy analysis, and public management.
- University of Maryland Global Campus has an [undergraduate certificate](#) in business analytics and an [upper division certificate](#) in business analytics both of which are designed to teach students how to manage and manipulate data and make strategic data-driven recommendations to influence business outcomes.
- University of Maryland, College Park has a [bachelor's degree](#) in operations management and business analytics that provides students with the knowledge and skills necessary to successfully apply quantitative and statistically based modeling techniques to data and advantageously use the information in the data to drive decision making and improve performance in an era with massive amounts of data. A [master's of science](#) through the Smith School of Business in business analytics is also available to teach students to solve pressing business challenges by applying analytics tools, software, programming and other technologies to your work.

No comparable community college program in Maryland exists that will provide students with an associate of arts. In addition, none have the same focus as Montgomery College's business analytics program with respect to the incorporation of a semester-long capstone course or the ability to transfer to University of Maryland's Smith School of Business, where students may earn both their bachelor's degree and a subsequent master's degree. Additionally, other comparable community college programs lack Montgomery College's proximity to businesses within the 270 corridor or Washington, DC metropolitan area. For these reasons, statewide designation will be sought. The new business analytics program fulfills the increased need for transfer programs in Montgomery County.

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

In an increasingly data-driven world, students interested in the field of business must possess skills in data literacy and data acumen. Understanding how to make descriptions, predictions, and prescriptions based on data will allow students to be valued employees in any business field. Business analytics combines tools and techniques for acquiring information and preparing it for analysis that can help reveal cause and effect, predict outcomes, and communicate insights to different audiences. The field of business analytics requires individuals who possess a curious nature, with a propensity for problem solving based on strong critical thinking. Those in business analytics must be able to visualize and communicate findings concisely and accurately. In terms of technical skills, analysts should understand coding and statistical languages, statistical software, and visualization tools. Individuals in business analytics require solid interpersonal and project management skills as they often work across organizational boundaries to coordinate analyses and communicate business insights.

Montgomery College's Business, Economics, Accounting, Computer Applications, and Hospitality Management department currently has a number of agreements with four-year institutions around Maryland, including Coppin State University, Loyola University, University of Baltimore, and University of Maryland at Universities at Shady Grove. The new business analytics associate of arts has been developed collaboratively with faculty and administrators from University of Maryland's Smith School of Business to create a 2 + 2 + 1 articulation agreement that allows students to earn a certificate, an associate's degree, a bachelor's degree, and also a master's degree. The curriculum exposes students to important coursework in business analytics while incorporating key General Education courses needed for transfer.

The new business analytics degree will be implemented with existing institutional resources in the Business, Economics, Accounting, Computer Applications, and Hospitality Management department as well as the Mathematics, Statistics, and Data Science department. This new degree will not create any additional expenses for the College. Highly qualified faculty, equipment, and library resources are already in place as the courses are currently being offered within the departments.

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

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

Montgomery College has a well-established relationship with Coppin State University (CSU) which provides a transfer pathway from the business administration associate of arts to CSU's bachelor in management that may be adapted to include transfer from the business analytics associate of arts to the bachelor in management. Montgomery College supports the mission and strategic goals of HBIs like Coppin State University (CSU) that are committed to educating all students, especially African American and minority student populations. Opportunities for future articulation agreements include:

- Bowie State University (bachelor of science in business administration-data analytics)
- Coppin State University (bachelor of science in data science)
- University of Maryland Eastern Shore (bachelor of science in computer science with a business focus)

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

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

As a transfer pathway, Montgomery College’s business analytics associate of arts enhances the uniqueness and institutional identities of HBIs by serving as a transfer pathway for their existing programs in data science and/or business analytics. Students from HBIs are welcome to Montgomery College to supplement their existing degrees with additional studies in analytics that will expand their skill sets.

In addition, Montgomery College’s associate’s degree emphasizes the ethical use of data in business decision-making for the benefit of stakeholders within organizations. Through hands-on activities, students have the opportunity to engage relevant social issues and recommend how change can be affected through business activities and in society at-large.

**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 describe the faculty who will oversee the program.**

As stated in Section D.2, Montgomery College currently offers an business administration associate of arts. The Business, Economics, Accounting, Computer Applications, and Hospitality Management department is pursuing the business analytics associate of arts to increase student transfer opportunities to four-year institutions and help fill the need for business analytics professionals in the Washington, D.C. metropolitan area. The creation of this program will also help Montgomery College identify and establish additional articulation agreements with other four-year institutions.

Four dedicated full-time faculty positions will sufficiently support the business analytics program. General Education courses will be taught by qualified faculty in each area of study. The department chairs and deans oversee the program.

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

Following are the program outcomes and the courses supporting those outcomes:

Upon completion of this program, students will be able to:	Courses
Employ business analytics tools and techniques for the purpose of using data to inform organizational decision-making related to core business functions.	BSAN 101, <a href="#">DATA 110</a> , <a href="#">CMSC 135</a> , BSAN 250
Understand, evaluate, and apply ethical principles and practices in the data lifecycle.	<a href="#">DATA 110</a> , BSAN 250, <a href="#">PSYC 102</a> , <a href="#">PHIL 140</a>
Demonstrate competency using appropriate statistical methods to engage in descriptive, predictive, and prescriptive analytics to gain business insights.	<a href="#">MATH 117</a> , <a href="#">DATA 110</a> , BSAN 250
Develop original analyses and prescribe solutions related to scenarios involving the core business functions of operations, finance and accounting, marketing, and human resources.	BSAN 101, <a href="#">ACCT 221</a> , <a href="#">ACCT 222</a> , <a href="#">ECON 201</a> , <a href="#">ECON 202</a>
Summarize and communicate findings of complex analyses in a concise way for a target audience using both graphics and statistical measures.	<a href="#">COMM 108</a> , <a href="#">COMM 112</a> , <a href="#">DATA 110</a> , BSAN 250, <a href="#">MATH 181</a> , <a href="#">MATH 117</a> , <a href="#">MATH 217</a>

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

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

Program learning outcomes will be assessed through course projects, writing assignments, and a capstone project in the program's required program courses (BSAN 101, [ACCT 221](#), [DATA 110](#), [CMSC 135](#), and BSAN 250).

**b) document student achievement of learning outcomes in the program**

There are several comprehensive and multifaceted assessment processes for all disciplines across the college. Montgomery College's [Office of Assessment](#) supports the College's mission and vision by providing leadership in the area of assessment and evaluation. This is achieved by:

- Providing leadership, guidance, and data support for the College's assessment of student learning outcomes for programs.
- Coordinating a comprehensive system of program reviews for academic areas.
- Collecting, analyzing, and distributing reports and information to the College about assessment results.
- Consulting with administrative areas, disciplines, and academic programs on assessment and evaluation projects.

Following is an overview of assessment processes at Montgomery College:

<b>Assessment Type</b>	<b>Purpose</b>	<b>Cycle</b>
General Education Outcomes Assessment	To examine student acquisition of General Education competencies.	Once every three years
Program Assessment	To assess student attainment of the program's student learning outcomes for the purpose of discovering what is working well and where improvements can be made to increase student learning.	Once every three years
Program Review (also referred to as the College Area Review)	To examine the current alignment and relevance of a program's curriculum and success with retaining and matriculating students.	Once every five years
Administrative Assessment	To review an administrative area's success with achieving outcomes and institutional priorities.	Once every five years

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

**Program Title: Business Analytics Associate of Arts**

The business analytics associate of arts is designed to meet the growing demand for highly skilled professionals with analytics expertise. The program grounds students in general business courses, including economics and accounting, and builds essential skills in business analytics, statistics, scripting in programming language, data visualization, and applied decision-making. The student will gain hands-on experience in using Excel, R, Tableau, and SQL in business analytics to summarize, visualize, and analyze data. The program is designed for students planning to transfer to a four-year college and major in business analytics.

Course Designator	Title	Credits
<b>General Education Requirements</b>		
<a href="#">ENGF</a>	English Foundation ( <a href="#">ENGF</a> )	3
<a href="#">MATH 117</a>	Elements of Statistics ( <a href="#">MATE</a> )	3
<a href="#">ARTD</a>	Art Distribution ( <a href="#">ARTD</a> ) ‡	3
<a href="#">BSSD</a>	Behavioral and Social Sciences ( <a href="#">BSSD</a> ) ** ‡	3
<a href="#">ECON 201</a>	Principals of Economics I ( <a href="#">BSSD</a> ) **	3
<a href="#">PHIL 140</a>	Introduction to the Study of Ethics ( <a href="#">HUMD</a> )	3
<a href="#">NSD</a>	Natural Sciences Distribution with or without Laboratory ( <a href="#">NSD</a> )	3
<a href="#">NSLD</a>	Natural Sciences Distribution with Laboratory ( <a href="#">NSLD</a> )	4
<a href="#">COMM 108</a> or <a href="#">COMM 112</a>	Foundations of Human Communication ( <a href="#">GEIR</a> ) or Business and Professional Speech ( <a href="#">GEIR</a> ) or	3
<a href="#">HLTH</a> or <a href="#">ARTD</a> or <a href="#">HUMD</a>	Health General Education Course, Art Distribution, or Humanities Distribution ( <a href="#">GEIR</a> ) ‡	3
<b>Program Requirements</b>		
<a href="#">ENGL 101</a>	Introduction to College Writing *	3
<a href="#">ACCT 221</a>	Accounting I	4
<a href="#">ACCT 222</a>	Accounting II	4
BSAN 101	Introduction to Business Analytics (new course)	3
BSAN 250	Business Analytics Practicum (new course)	2
<a href="#">CMSC 135</a>	Introduction to Scripting	3
<a href="#">DATA 110</a>	Data Visualization and Communication	3
<a href="#">ECON 202</a>	Principals Economics II	3
<a href="#">MATH 150</a> or <a href="#">MATH 181</a>	Elementary Applied Calculus I or Calculus I †	4
<b>Total Credits</b>		<b>60</b>

\* [ENGL 101](#)/ENGL 101A, if needed for [ENGL 102](#)/[ENGL 103](#). Please consult an advisor or transfer institution for assistance with course selection.

\*\* Behavioral and Social Sciences (BSSD) should be from different disciplines.

† Many, but not all, four-year institutions require [MATH 150](#) or [MATH 181](#). Students should consult with an advisor regarding the requirements of transfer institutions.

‡ Students must complete one [GCP] Global or Cultural Perspectives designated course as part of their General Education Program to graduate.

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### Program Outcomes:

Upon completion of this program a student will be able to:

- Employ business analytics tools and techniques for the purpose of using data to inform organizational decision-making related to core business functions.

- Understand, evaluate, and apply ethical principles and practices in the data lifecycle.
- Demonstrate competency using appropriate statistical methods to engage in descriptive, predictive, and prescriptive analytics to gain business insights.
- Develop original analyses and prescribe solutions related to scenarios involving the core business functions of operations, finance and accounting, marketing, and human resources.
- Summarize and communicate findings of analyses using charts, graphs, infographics, and dashboards.

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**General Education/Course Designators:**

- [ARTD](#): Arts Distribution
- [BSSD](#): Behavioral and Social Sciences Distribution
- [ENGE](#): English Foundation
- [GCP](#): Global and Cultural Perspectives Requirement
- [GEIR](#): General Education Institutional Requirement
- [HUMD](#): Humanities Distribution
- [MATE](#): Mathematics Foundation
- [NSD](#): Natural Sciences Distribution with or without Laboratory
- [NSLD](#): Natural Sciences Distribution with Laboratory
- CE: Credit Available by Examination
- CE-R: Credit Available by Examination, Rockville Campus
- R-Only: Only offered at the Rockville Campus

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**List of Courses with Title, Semester Credit Hours, and Course Descriptions:**

**[ACCT 221 - Accounting I](#)**

An introduction to the principles and procedures related to accounting theory and practice from the perspective of users of financial information. Topics include the accounting cycle, the preparation and analysis of financial statements, and accounting information. PREREQUISITE(S): Two units of high school mathematics or appropriate score on the College's assessment test. Assessment Level(s): [ENGL 101/ENGL 011](#), [MATH 050](#), [READ 120](#). Four hours each week.

**[ACCT 222 - Accounting II](#) CE-R**

The study and analysis of managerial accounting. Topics include cost accumulation, evaluation, and analysis for decision making, as well as coverage of the statement of cash flows and financial statement analysis. PREREQUISITE(S): [ACCT 221](#). Four hours each week.

**BSAN 101 - Introduction to Business Analytics (new course) R-only**

An introduction to business analytics and the use of data for decision making in business functions. Course topics focus on understanding various business functions such as sales, customer service, marketing, or IT, and applying essential skills and tools to measure and improve operational outcomes. Students use Microsoft Excel in practical business scenarios to summarize, visualize, and analyze data. Other data analytics software is also introduced. PREREQUISITE(S): A minimum grade of C or better in [ELAI 990](#) or appropriate score on the English assessment test. Assessment Level(s): [ENGL 101/ENGL 011](#), [MATH 050](#), [READ 120](#). Three hours each week.

**BSAN 250 - Business Analytics Capstone (new course)**

A comprehensive, project-based course where students gain hands-on experience working with real-world data. Montgomery College partners in business and industry work alongside faculty

and students providing expertise, guidance, and real data. The course includes topics in advanced data mining, data ethics, and reproducible research. PREREQUISITE(S): A grade of C or better in [DATA 110](#) or consent of the department. Two hours each week.

### **[CMSC 135 - Introduction to Scripting](#)**

Covers concepts of scripting languages based on languages such as Python, Perl, JavaScript, VBScript, and PowerShell. Students learn how to use scripting languages for rapid prototyping, web programming, data processing, and application extension. Assessment Level(s): [ENGL 101/ENGL 011/ELAI 990](#), [MATH 050](#), [READ 120](#). Three hours each week.

### **[COMM 108 - Foundations of Human Communication](#)** (GEIR)

A survey course that covers communication theory and develops communication skills for personal and professional relationships in interpersonal, group, and public settings. Course content includes practice in the application of the principles of listening, verbal and nonverbal communication, group dynamics, and public speaking. Assessment Level(s): [ENGL 101/ENGL 011](#), [READ 120](#). Three hours each week.

### **[COMM 112 - Business and Professional Speech Communication](#)** (GEIR)

A study of communication theory as applied to business and organizational environments. Emphasis on development of effective communication skills for professional situations including team building, interviewing, public speaking, and accommodating diverse perspectives. Assessment Level(s): [ENGL 101/ENGL 011](#), [READ 120](#). Three hours each week.

### **[DATA 110 - Data Visualization and Communication](#)**

Emphasis on data visualization and communication skills for professional situations including effective quantitative summary and public speaking. Preparing and producing data visualizations, presentations, and technical documents for specific audiences and analyses for general audiences. PREREQUISITE(S): A grade of C or better in [MATH 117/MATH 117A](#), [MATH 217](#), [BSAD 210](#) or consent of department. Three hours each week.

### **[ECON 201 - Principles of Economics I](#)** (BSSD) CE-R

Covers macroeconomics - the study of the economy as a whole. Macroeconomics can help students make personal and business decisions and assess public policy issues throughout their lives. Topics include: supply and demand, national income and product, unemployment, inflation, aggregate supply and demand, economic growth and development, money and banking, monetary and fiscal policy, international trade, and economic systems. PREREQUISITE(S): High school algebra or its equivalent or consent of department. Assessment Level(s): [ENGL 101/ENGL 011](#), [MATH 050](#), [READ 120](#). Three hours each week.

### **[ECON 202 - Principles of Economics II](#)** CE-R

Covers microeconomics- the study of how individuals, businesses, and governments make choices about limited resources to achieve their goals. Microeconomics can help students make personal and business decisions and assess public policy issues throughout their lives. Topics include supply and demand, elasticity, government controls, market failure, production, business costs, profit maximization, and market structures. PREREQUISITE(S): High school algebra or its equivalent or consent of department. Assessment Level(s): [ENGL 101/ENGL 011](#), [MATH 050](#), [READ 120](#). Three hours each week.

### **[ENGL 101 - Introduction to College Writing](#)** CE

An introduction to college writing. The first of two sequential freshman composition courses, this course emphasizes the process of critical thinking, reading, and writing. Student writing progresses from a personal to an academic perspective. Students write for different audiences

and purposes using a variety of rhetorical strategies. Students write in response to reading and are introduced to standard documentation procedures. Students are required to submit a final portfolio that meets department requirements. PREREQUISITE(S): Placement through assessment testing; or concurrent enrollment in [ENGL 011](#); or completion of [IERW 002](#) with a grade of A; or completion of AELW 940/[ELAI 990](#) with a grade of C or better; or consent of the department. Assessment Level(s): [READ 120](#). Three hours each week.

### **[ENGL 102 - Critical Reading, Writing and Research](#) (ENGF)**

Studies in argumentation and research. A second of two sequential freshman composition courses, this course is designed to help students learn to identify, critically read, analyze and evaluate, and write arguments using logic and appropriate rhetorical techniques. Students construct thesis-driven academic essays, synthesizing and incorporating the words and ideas of others and using formal documentation. Students learn to identify audience as well as employ effective tone, word choice, and sentence patterns. To comply with Maryland state requirements for English Foundation (ENGF), [ENGL 102](#) must be completed with a final grade of C or better for a student to graduate with an associate's degree. PREREQUISITE(S): A grade of C or better in [ENGL 101](#)/[ENGL 011](#) or consent of department. Three hours each week.

### **[ENGL 103 - Critical Reading, Writing and Research in the Workplace](#) (ENGF)**

Studies in argumentation and research in the workplace. A second of two sequential freshman composition courses, this course is designed to help students understand the processes and products associated with writing used in technology and business. Emphasis will be on the writing process, including writing to different audiences and supporting claims persuasively with appropriate evidence and detail. Students will write a variety of reports, documentation, and proposals, employing a range of stylistic options. The course will include an introduction to the rules for integrating visual aids into technical documents and a major research project focusing on developing an appropriate research question, conducting scholarly research, and incorporating information into writing with the proper conventions of citation. To comply with Maryland state requirements for English Foundation (ENGF), [ENGL 103](#) must be completed with a final grade of C or better for a student to graduate with an associate's degree. PREREQUISITE(S): A grade of C or better in [ENGL 101](#)/[ENGL 011](#) or consent of department. Three hours each week.

### **[MATH 117 - Elements of Statistics](#) (MATF)**

An introductory non-calculus statistics course to serve a variety of students who need a working knowledge of statistics. Descriptive analysis and treatment of data, probability and probability distributions, statistical inferences, linear regression and correlations, chi-square, and some nonparametric statistics. Pre-existing statistical computer programs may be used for some applications. PRE- or COREQUISITE(S): Appropriate score on mathematics assessment test, a grade of C or better in [MATH 050](#) or [MATH 092](#), or concurrent enrollment in [MATH 017](#), or consent of department. Assessment Level(s): [ENGL 101](#)/[ENGL 011](#) or AELW 940/[ELAI 990](#), [READ 120](#) or AELR 930/[ELAR 980](#). Three hours each week.

### **[MATH 150 - Applications in Calculus 1](#)**

Differential and integral calculus with applications in business, economics, social and the life sciences. Topics include functions and their graphs, constructing mathematical models, the derivative and its applications, the integral and its applications, exponential and logarithmic functions, and functions of several variables. This course is recommended for business majors and does not fulfill the calculus requirement for most science or engineering degrees. This course is not open for credit to students who have a grade of C or better in [MATH 181](#) or equivalent. PREREQUISITE(S): A grade of C or better in [MATH 050](#), appropriate score on



mathematics assessment test, or consent of department. Assessment Level(s): [ENGL 101/ENGL 011](#) or AELW 940/[ELAI 990](#), [READ 120](#) or AELR 930/[ELAR 980](#). Four hours each week.

### **[MATH 181 – Calculus I](#)**

[MATH 181](#) and [MATH 182](#) are intended primarily for students of the physical sciences, engineering, and mathematics. An introduction to major ideas of single variable calculus including limits, derivatives, and integrals of algebraic and transcendental functions; applications. PREREQUISITE(S): A grade of C or better in [MATH 165](#), appropriate score on mathematics assessment test, or consent of department. Assessment Level(s): [ENGL 101/ENGL 011](#) or AELW 940/[ELAI 990](#), [READ 120](#) or AELR 930/[ELAR 980](#). For computation of tuition, this course is equivalent to five semester hours. Five hours each week.

### **[PHIL 140 – Introduction to the Study of Ethics \(HUMD\)](#)**

Covers contemporary ethical issues in public policy and personal conduct. Topic areas may include bioethics and medicine; inequality and discrimination; justice and punishment; information ethics; environmental ethics; or other areas. Practical issues in these areas will be discussed in relation to ethical theories. Various ethical perspectives will be critically examined. Assessment Level(s): [ENGL 101/ENGL 011](#), [READ 120](#). Three hours each week.

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

Each two-year plan of study includes General Education requirements, program requirements, and program electives. General Education requirements are interspersed with program requirements for each program.

The following General Education courses are required for students to graduate with the business analytics associate of arts and meet the external standards set forth in COMAR and Montgomery College’s institutional requirements.

Course Designator	Title	Credits
<b>Foundation Courses</b>		
Elective	English Foundation ( <a href="#">ENGE</a> )	3
<a href="#">MATH 117</a>	Elements of Statistics * ( <a href="#">MATE</a> )	4
<b>Distribution Courses</b>		
ARTD	Arts Distribution ( <a href="#">ARTD</a> ) ‡	3
<a href="#">PHIL 140</a>	Introduction to the Study of Ethics ( <a href="#">HUMD</a> )	3
<a href="#">ECON 201</a>	Principles of Economics I ( <a href="#">BSSD</a> ) **	3
Elective	Behavioral and Social Sciences Distribution ( <a href="#">BSSD</a> ) **	3
Elective	Natural Sciences Distribution with or without Laboratory ( <a href="#">NSD</a> )	3
Elective	Natural Sciences Distribution with Laboratory ( <a href="#">NSLD</a> )	4
<b>Institutional Requirements</b>		
<a href="#">COMM 108</a> or <a href="#">COMM 112</a>	Foundations of Human Communication ( <a href="#">GEIR</a> ) or Business and Professional Speech ( <a href="#">GEIR</a> )	3
Elective	Any <a href="#">Health</a> General Education Course or <a href="#">Arts Distribution</a> or <a href="#">Humanities Distribution</a> ( <a href="#">GEIR</a> ) †	3
<b>Total General Education Credits</b>		<b>32</b>

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

There are no specialized accreditation or graduate certificate requirements for this program and its students.

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

There are no written contracts with other institutions or non-collegiate organizations for 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.**

Montgomery College's online catalog helps students quickly locate and save details about the current schedule of classes, courses, and programs. The catalog is dynamic, meaning a live document that reflects changes in real time. The online catalog is located on the official policies page of the College's website at [montgomerycollege.edu/catalog](http://montgomerycollege.edu/catalog).

To determine program-specific information, students can view the program advising guide aligned with any program in the catalog. These guides directly link to the catalog so they reflect real-time information. They are meant to supplement the advising process and should be used in conjunction with the Montgomery College catalog and other College resources. Upon approval, the new business analytics associate of arts advising guide will be displayed on Montgomery College's online catalog.

Students may find general information such as availability of academic support services, financial aid resources, tuition rates, and payment policies by using the search function at [montgomerycollege.edu](http://montgomerycollege.edu).

**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.**

Upon approval, the new business analytics associate of arts will be published in the College catalog. The Office of the Senior Vice President for Academic Affairs oversees publication and maintenance of the online catalog.

Advertising and recruitment for the business analytics associate of arts will occur at College events such as new student orientation, major-specific fairs, guest speaker series, symposia, college recruitment fairs, and networking opportunities from outside agencies and organizations. The Office of Communications oversees publication of electronic and hard copy marketing materials.

**H. Adequacy of Articulation**

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

Montgomery College's business analytics faculty actively pursue articulated academic agreements that provide students with clearly-defined pathways for successful completion and transfer:

- Montgomery College and the Robert H. Smith School of Business at the University of Maryland College Park are working together to formalize a transfer pathway from Montgomery College's business analytics associate of arts to the Smith School's [bachelor of science in operations management and business analytics](#) as an addendum to the original articulation agreement between the institutions related to the business administration associate of arts. In addition, this pathway with the Smith School of Business provides students the opportunity to continue their education to earn a master of science in business analytics with only one additional year of coursework (see Appendix A).
- Montgomery College and University of Maryland Global Campus (UMGC) will expand on the existing transfer pathway between Montgomery College's business administration associate of arts and UMGC's [bachelor's in business administration](#). The expanded pathway will allow for transfer of Montgomery College's business analytics associate of arts to UMGC's bachelor in business administration. The expanded pathway will also include the ability to transfer credits from Montgomery College's degree to UMGC's [undergraduate certificate in business analytics](#)
- Montgomery College is also reaching out to other partner institutions to enable transfer of BSAN 101 as an elective to other four-year business programs.

The Business, Economics, Accounting, Computer Applications, and Hospitality Management department and Mathematics, Statistics, Data Science and Computer Science department are also considering additional transfer pathways with the following four-year institutions (also noted in Section E.1) with the possibilities that courses from Montgomery College's business analytics associate of arts may have direct transfer to courses in the degrees of the following schools:

- Bowie State University (bachelor of science in business administration-data analytics)
- Coppin State University (bachelor of science in data science)
- University of Maryland Eastern Shore (bachelor of science in computer science with a business focus)

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

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

Montgomery College appoints faculty that are experienced educators and working professionals in the field of business, economics, accounting, mathematics, statistics, and data science. The current faculty continue to engage in professional development opportunities and community partnerships to improve curriculum development and design. Furthermore, because of the College's close proximity to the Washington, D.C. metropolitan area, numerous active practitioners serve as part-time faculty as well as guest speakers.

The following is a list of faculty who will teach courses in the degree, other than in the General Education courses. The table includes the degree title, field, and academic title/rank for each faculty. General Education courses will be taught by qualified faculty in each area of study. [CMSC 135](#) - Introduction to Computer Scripting will also be taught by qualified adjunct faculty.

Name	Terminal Degree	Academic Title	Courses Taught
Angel Salinas Gonzalez	<ul style="list-style-type: none"> <li>▪ Ph.D. in Economics</li> </ul>	FT Faculty	<a href="#">ECON 201</a> , <a href="#">ECON 202</a>
Kathryn Klose	<ul style="list-style-type: none"> <li>▪ M.S. in Financial Management</li> <li>▪ Ph.D. in Higher Ed Policy</li> </ul>	FT Faculty	<a href="#">ACCT 221</a> , BSAN 101
Jonathan Opata	<ul style="list-style-type: none"> <li>▪ M.B.A.</li> <li>▪ Ph.D. in Business Administration and Management</li> </ul>	FT Faculty	BSAN 101, BSAN 250
Rachel Saidi	<ul style="list-style-type: none"> <li>▪ M.S. in Statistics</li> </ul>	FT Faculty	<a href="#">DATA 110</a> , <a href="#">MATH 181</a> , <a href="#">MATH 217</a>

**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**

Montgomery College offers numerous in-person and online training opportunities for faculty that focus on best practices in pedagogy, content delivery, and course assessment. The College also offers an educational assistance program (EAP) that provides faculty funds to support graduate and doctoral coursework and professional conferences and workshops.

Business analytics faculty maintain active memberships in many professional organizations related to the discipline, such as the [American Statistical Association](#), the [Mathematical Association of America](#), [AICPA](#), and [International Institute of Business Analysts](#). Accounting faculty holding the CPA designation are required to have experience and teach business analytics. Faculty attend conferences and continuing education programs through these and other professional organizations.

**b) The learning management system**

Montgomery College's E-Learning, Innovation, and Teaching Excellence ([ELITE](#)) department offers many online and in-person training sessions for the College's learning management system (Blackboard), as well as Quality Matters training and semester-long training to prepare faculty for distance education courses.

Since 2020, all full and part-time faculty are trained in the best practices for implementing structured remote instruction (live synchronous online classes) and distance learning (asynchronous web-based classes) through the learning management system. Faculty are also encouraged to use the learning management system to support their in-person classes.

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

ELITE offers numerous training opportunities in distance education pedagogy and instructional technology. A team of instructional designers works closely with individual faculty, academic departments, and committees to design and deliver faculty professional development. In addition, all online (remote and distance) instructional faculty are required to complete Blackboard training prior to teaching in the online setting.

**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 various library resources are adequate to support the proposed program. Students have ready access to a supply of current and relevant books, journals, periodicals, and other reference materials needed to meet the requirements of the curriculum.

The Montgomery College library has three locations with comfortable facilities conducive to academic work. Library services are available 73 hours per week. The library supports the academic goals of the College's students and employees through group instruction sessions, personal research consultations, and online support. Available technology includes computers, printers, charging stations, high-speed scanners, laptops, tablets, One Button Studios for easy video creation, and collaborative workstations for group projects. Web-delivered subscription databases cover academic disciplines, including business, economics, accounting, and data science. The library also provides course-specific series taught at the College. For example, [O'Reilly Online Learning Database](#) provides countless books on business analytics, data science, programming, and data engineering. BSAN 101 will use open-educational resources from the O'Reilly Database.

**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.**

Physical facilities and equipment are adequate to support the proposed program as Montgomery College currently offers all courses in the new business analytics associate of arts. The program will be implemented with existing resources.

- 2. Provide assurance and any appropriate evidence that the institution will ensure students enrolled in and faculty teaching in distance education will have adequate access to:**
  - a) An institutional electronic mailing system, and**
  - b) A learning management system that provides the necessary technological support for distance education**

Upon admission, every student receives a Montgomery College email account; this is the primary method for receiving correspondence and information from various College offices and departments. The College utilizes Blackboard as its learning management system. Additionally, Montgomery College promotes distance learning by providing access to online counseling, advising, library resources, tutoring, and more.

**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**

**1. Reallocated Funds:**

- Reallocated funds include faculty, administrator, and administrative staff salaries currently supporting the business administration associate of arts. The same positions will support the new business analytics program.

## 2. Tuition and Fee Revenue:

- The credit hour rate is based on [2022-2023 Tuition Rates](#) and includes both tuition and fees. The first credit hour is \$201 (\$132 plus minimum \$50 consolidated fee and other fees).
- Full-time enrollment is equivalent to 30 credit hours for the academic year; part-time enrollment is equivalent to 15 credit hours for the academic year.

## 3. Grants and Contracts:

- No grants or external funding needed to implement this program.

## 4. Other Sources:

- No additional funds needed to implement this program.

## 5. Total Year:

- Program resources reflect a conservative projection of full-time and part-time student enrollment over five years.

Resource Categories	Year 1 (2022-23)	Year 2 (2023-24)	Year 3 (2024-25)	Year 4 (2025-26)	Year 5 (2026-27)
1. Reallocated Funds	\$119,765	\$122,834	\$125,990	\$129,234	\$138,966
2. Tuition/Fee Revenue (c + g below)	\$107,691	\$143,786	\$191,846	\$236,124	\$271,078
a. Number of F/T Students	10	14	18	21	24
b. Annual Tuition/Fee Rate	\$5,322	\$5,466	\$5,610	\$5,754	\$5,898
c. Total F/T Revenue (a x b)	\$55,721	\$74,398	\$99,265	\$122,176	\$140,261
d. Number of P/T Students	20	25	33	40	44
e. Credit Hour Rate	\$177.40	\$182.20	\$187.00	\$191.80	\$196.60
f. Annual Credit Hour Rate	15	15	15	15	15
g. Total P/T Revenue (d x e x f)	\$51,969	\$69,388	\$92,581	\$113,949	\$130,817
3. Grants, Contracts & Other External Sources	\$0	\$0	\$0	\$0	\$0
4. Other Sources	\$0	\$0	\$0	\$0	\$0
TOTAL (Add 1 - 4)	\$227,455	\$266,620	\$317,836	\$365,358	\$410,044

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

#### 1. Faculty (# FTE, Salary, and Benefits):

- Faculty who currently support the Business, Economics, Accounting, Computer Applications, and Hospitality Management department and the Mathematics, Statistics, and Data Science department will support the business analytics associate of arts. Part-time faculty will be hired as needed per semester.
- Faculty salaries are based on an annual increase of 2.75 percent.
- Benefits include 7.65 percent for FICA and \$9,000 per FTE for insurance.

Name	Appointment/Status	Program Time
Angel Salinas Gonzalez	Full-time Professor	10%
Kathryn Klose	Full-time Professor	10%
Jonathan Opata	Full-time Professor	60%
Rachel Saidi	Full-time Professor	10%

**2. Administrative Staff (# FTE, Salary, and Benefits):**

- Administrative staff who currently support the Business, Economics, Accounting, Computer Applications, and Hospitality Management department and the Mathematics, Statistics, and Data Science department will support the business analytics associate of arts.
- Administrative staff salaries based on an annual increase of 3.0 percent.
- Benefits include 7.65 percent for FICA and \$9,000 per FTE for insurance.

Name	Appointment/Status	Program Time
Hoa Nguyen	Department Chair	5%
Alton Henley	Dean	5%
Milton Nash	Dean	3%

**3. Support Staff (# FTE, Salary, and Benefits):**

- Support staff who currently support the Business, Economics, Accounting, Computer Applications, and Hospitality Management department and the Mathematics, Statistics, and Data Science department will support the business analytics associate of arts.
- Support staff salaries based on an annual increase of 3.0 percent.
- Benefits include 7.65 percent for FICA and \$9,000 per FTE for insurance.

Name	Appointment/Status	Program Time
Michael Vaughan	Administrative Aide	2%

**4. Equipment:**

- No additional equipment needed to implement this program.

**5. Library:**

- No additional library resources needed to implement this program.

**6. New and/or Renovated Space:**

- No additional facilities needed to implement this program.

**7. Other Expenses:**

- No other expenses anticipated to implement this program.

**8. Total Year:**

- Expenditures include faculty, administrator, and administrative staff salaries currently supporting the business administration associate of arts. The same positions will support the new business analytics program.

Table 2: Program Expenditures					
Expenditure Categories	Year 1 (2022-23)	Year 2 (2023-24)	Year 3 (2024-25)	Year 4 (2025-26)	Year 5 (2026-27)
1. Faculty (b + c below)	\$96,477	\$98,907	\$101,404	\$103,970	\$106,606
a. Number of FTE	0.90	0.90	0.90	0.90	0.90
b. Total Salary	\$82,096	\$84,354	\$86,674	\$89,057	\$91,506
c. Total Benefits	\$14,380	\$14,553	\$14,731	\$14,913	\$15,100
2. Admin. Staff (b + c below)	\$20,716	\$21,302	\$21,906	\$22,528	\$23,169
a. Number of FTE	0.13	0.13	0.13	0.13	0.13
b. Total Salary	\$18,157	\$18,701	\$19,262	\$19,840	\$20,436
c. Total Benefits	\$2,559	\$2,601	\$2,644	\$2,688	\$2,733
3. Support Staff (b + c below)	\$2,572	\$2,625	\$2,680	\$2,736	\$2,794
a. Number of FTE	0.09	0.09	0.09	0.09	0.09
b. Total Salary	\$1,637	\$1,686	\$1,737	\$1,789	\$1,843
c. Total Benefits	\$935	\$939	\$943	\$947	\$951
4. Technical Support and Equipment	\$0	\$0	\$0	\$0	\$3,604
5. Library	\$0	\$0	\$0	\$0	\$2,794
6. New or Renovated Space	\$0	\$0	\$0	\$0	\$0
7. Other Expenses	\$0	\$0	\$0	\$0	\$0
TOTAL (Add 1 - 7)	\$119,765	\$122,834	\$125,990	\$129,234	\$138,966

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

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

The College assesses and reviews programs on a regular basis based on the information noted in Section G.3. All courses and programs at Montgomery College have clearly stated learning outcomes. The program learning outcomes align with and support the student learning outcomes of the individual courses that form a degree's curriculum. The program assessment process involves assessment planning, data collection, review of results, action plan development and implementation, and reassessment. The cyclical loop is closed by using the assessment results to improve teaching and learning experiences.

College faculty undergo an extensive and comprehensive evaluation process in compliance with the agreements between the College and the Montgomery College Chapter of American Association of University Professors (full-time faculty) and the Service Employees International Union (part-time faculty). This process includes student evaluations, self-evaluations, peer reviews, classroom observations, department chair reviews, and dean evaluation. The evaluation schedule varies from annually to every five years, depending on the faculty contract type and contract year. Evaluations determine if faculty members demonstrate high-quality performance in their teaching assignments, seek professional growth in their teaching area, are available to students, meet special objectives from preceding evaluations, and demonstrate substantial progress in service to their campus, College, and/or community. The purpose of a performance review is to promote the highest quality teaching techniques, to ensure knowledge of subject matter, to encourage professional growth and development of faculty, to assess strengths and weaknesses in faculty performance, and to assess service to the College community.

**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.**

All programs at Montgomery College go through an academic program review every five years to determine program viability. The academic program review ensures all programs effectively use the College's instructional resources, support the College's mission, and serve the needs of



students and the College community. The business analytics associate of arts will go through the academic program review process as all other programs at Montgomery College.

Montgomery College is proud to be selected as an [Achieving the Dream \(ATD\)](#) institution. ATD is a nationwide network of higher education institutions committed to systemic change to increase student success and completion, especially among disadvantaged students. As an ATD institution, Montgomery College works to build a culture of evidence that uses data to make informed decisions for student success. One example of the College's use of data is the [Student Success Scorecard](#), which is a summary of indicators used to track student achievement. The academic program review process and the Student Success Scorecard provide actionable information to help the College assess and improve its focus on achievement and the success of every student.

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

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

Montgomery College is committed to creating a welcoming and inclusive environment for all students. As a whole, the Montgomery College community promotes an equity and inclusion focus where radical inclusion—or deeply rooted values of welcoming all individuals seeking higher education or continuing education—are an essential element of the College's fabric. The College's steadfast commitment to radical inclusion creates an inclusive, respectful learning environment that fosters critical thinking and civil discourse.

The business analytics program is committed to serving Montgomery College's diverse student body and promoting equity and inclusion by: (1) increasing the recruitment of women and minority students to promote diversity in the student body and business analytics profession as a whole, (2) providing a safe forum for students to debate controversial ethical and social topics related to business analytics, and (3) providing a curriculum designed to promote student success, retention, completion, and access to career opportunities.

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

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

Not applicable. This program is not related to low-productivity programs identified by the Maryland Higher Education Commission.

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

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

Montgomery College received Commission approval to provide distance education programs. Montgomery College currently offers numerous degrees and certificates with a fully online delivery option, all of which have been approved by the Commission.

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

C-RAC guidelines are not related to the proposed business analytics associate of arts because the program does not have a fully online delivery option.

The Middle States Commission on Higher Education is the accrediting body for Montgomery College. The College follows the appropriate guidelines and adheres to the national standards and integrity for our distance education programs. Montgomery College received a positive outcome at the 2018 reaccreditation.

## Appendix A – Transfer Pathway and Letter of Intent

### Montgomery College to University of Maryland at The Universities at Shady Grove’s Robert H. School of Business

#### Montgomery College Business Analytics Associate of Arts

First Semester	Credit Hours
ENGL 101 - Intro to College Writing *	3
MATH 117 - Elements of Statistics (MATF)	3
Behavioral and Social Sciences Distribution (BSSD)** †	3
COMM 112 - Business & Professional Speech or COMM 108 - Foundations of Human Comm (GEIR)	3
BSAN 101 - Intro to Business Analytics	3
<i>Total per Semester</i>	<i>15</i>
Second Semester	
ENGL 102 or 103 - Critical Reading, Writing, & Research (in the Work Place) (ENGF)	3
Arts Distribution (ARTD) †	3
PHIL 140 - Intro to the Study of Ethics (HUMD)	3
CMSC 135 - Intro to Scripting	3
MATH 150 or MATH 181 Calculus to fulfill MC's Mathematics Foundation (MATF) †	4
<i>Total per Semester</i>	<i>16</i>
Third Semester	
ECON 201 - Principles of Economics (BSSD) ***	3
Natural Sciences Distribution with or without Lab (NSD)	3
HLTH, ARTD, or HUMD (GEIR) †	3
ACCT 221 - Accounting I	4
DATA 110 - Data Visualization & Communication	3
<i>Total per Semester</i>	<i>16</i>
Fourth Semester	
Natural Science Distribution with Lab 4 semester hours (NSLD)	4
ACCT 222 - Accounting II	4
BSAN 250 - Business Analytics Practicum	2
ECON 202 - Principles of Economics II	3
<i>Total per Semester</i>	<i>13</i>
<b>Total for Degree</b>	<b>60</b>

#### Footnotes from MC webpage

\* ENGL 101/ENGL 101A, if needed for ENGL 102/ENGL 103, or elective. Please consult an advisor or transfer institution for assistance with course selection.

\*\*\* Behavioral and Social Science Distribution (BSSD) courses must come from different disciplines.

† Many, but not all, four year institutions require MATH 150 or MATH 181. Students should consult with an advisor regarding the requirements of transfer

‡ Students must complete one [GCP] Global or Cultural Perspectives designated course as part of their General Education Program to graduate.

#### University of Maryland (UMD) at USG B.S. in Operations Mgmt & Business Analytics (Final 2 Years)

First Semester	Credit Hours
BGMT 385 - Operations Management	3
BMG 301 - Info Systems	3
BMG 340 - Biz Finance	3
BMG 350 - Marketing Principles	3
BMG 367 - Career Search	1
Upper Level Elective	3
<i>Total per Semester</i>	<i>16</i>
Second Semester	
BGMT 332 - Quantative Models Mgmt Decisions	3
BGMT Major Requirement (3 of 6) from options	3
BMG 364 - People & Organizations	3
Professional Writing (ex ENGL 394)	3
BMG 495 - Strategic Management	3
<i>Total per Semester</i>	<i>15</i>
Third Semester	
BMG 430 - Data Modeling in Business (Major Requirement (4 of 6)	3
BMG 380 - Biz Law	3
Upper Level ECON from options (ECON 305/306/330/340)	3
Upper Level Elective	3
Upper Level Elective	3
<i>Total per Semester</i>	<i>15</i>
Fourth Semester	
BMG 431 - Data Analytics (Major Requirement 5 of 6)	3
BGMT Major Requirement (6 of 6) from options	3
Upper Level Elective	3
Upper Level Elective	3
Any Level Elective	2
<i>Total per Semester</i>	<i>14</i>
<b>Total for Degree Yrs 2-4</b>	<b>60</b>
<b>Total for BS Degree</b>	<b>120</b>

#### Footnotes from UMD webpage

<https://drive.google.com/file/d/15qmawEd0LFv9vd-gPvtjmlL193JR3wjc5/view?usp=sharing>

University of Maryland (UMD) at UMCP M.S. in. Business Analytics

Full-time based on 9 CR HRS per semester	Credit Hours
BUDT 703 - Database Management Systems	3
BUDT 704 - Data Analysis in Python	3
BUDT 730 - Data, Models and Decisions	3
<i>Total per Semester</i>	<i>9</i>
<b>Second Semester</b>	
BUDT 732 - Decision Analytics	3
BUDT 737 - Big Data and AI	3
BUDT 758 T - Predictive Analytics	3
<i>Total per Semester</i>	<i>9</i>
<b>Third Semester</b>	
BUDT 758 D - Data Viz & Web Analytics	3
BUDT 758 V or Z - Operations Analytics or Computer Sim*	2
BUDT 758 L - Price Optimization	3
<i>Total per Semester</i>	<i>8</i>
<b>Fourth Semester</b>	
BUDT 758 W - Capstone Project	3
BUDT 758 A - Biz Comm	1
<i>Total per Semester</i>	<i>4</i>
<b>Total for Degree</b>	<b>30</b>



To: Maryland Higher Education Commission

Dear Secretary of Higher Education:

The Robert H. Smith School of Business at the University of Maryland College Park is delighted to support the proposal from Montgomery College to launch an Associates of Arts in Business Analytics degree program. We have been working with Montgomery College for over a year on this proposal so that we may build a successful pathway for students to complete their AA degree and then matriculate in the Smith School's Operations Management and Business Analytics (OMBA) major.

The curriculum proposed by MC aligns with the learning outcomes of our OMBA major at Smith. For your reference, I've attached the learning outcomes to this letter. We have used these learning outcomes to help our colleagues at MC shape their proposed curriculum. As you can see from the proposal, students interested in business analytics will take the required gateway courses at MC to gain admission as an external transfer student to the Smith School. Specifically, these are MATH120, BMGT220, and BMGT230.

Additionally, the Smith School of Business is committed to co-curricular opportunities for MC students interested in business analytics. Specifically, we will work with the students to help provide information about career opportunities and experiential learning.

We have enjoyed a longstanding relationship with MC. Many of our external transfer students began their higher education journey at MC and find success in one of our eight majors at the Smith School. While some of them come to College Park, many others enjoy success in the three majors that we offer at our Shady Grove campus – Accounting, Management, and Marketing. We hope that a pipeline of students in business analytics from MC will help us bring our OMBA major to Shady Grove as well.

Thank you for your consideration and support of this important initiative.

Sincerely,

A handwritten signature in black ink, appearing to read 'Prabhudev Konana'.

Prabhudev Konana, Ph.D.  
Dean and Professor of Information Systems

## Operations Management and Business Analytics Learning Outcomes

[\(https://academiccatalog.umd.edu/undergraduate/colleges-schools/business/decision-operations-information-technologies/operations-management-business-analytics-major/\)](https://academiccatalog.umd.edu/undergraduate/colleges-schools/business/decision-operations-information-technologies/operations-management-business-analytics-major/)

1. Apply elements of critical thinking.
2. Identify common situations in chosen career that could result in ethical dilemma.
3. Analyze ethical scenarios and apply frameworks to develop solutions.
4. Foster and sustain team environments that are inclusive of ideas from all contributing members.
5. Apply leadership skills to motivate and coordinate with other to achieve goals.
6. Write professional-grade business documents.
7. Develop and deliver effective oral presentations.
8. Identify and use appropriate quantitative tools and techniques.
9. Use software applications to analyze and solve problems.
10. Explain how functional areas interact and drive one another.
11. Select and justify the best solution option(s) for a given management problem.
12. Classify the sources of uncertainty within a process and apply operations management approaches to manage uncertainty so as to minimize waste and improve efficiency.
13. Describe and effectively use advanced data modeling techniques to predict and infer from real-world data sets.