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: _(signature)_ Date:
	Date of Approval/Endorsement by Governing Board:

Revised 1/2021

Aminta H. Breaux, Ph.D.

President

Henry Administration Bldg., Ste. 2000
14000 Jericho Park Rd, Bowie, MD 20715
P 301-860-3555
F 301-860-3510
E president@bowiestate.edu
bowiestate.edu

December 1, 2022

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

RE: New Academic Program Proposal – Post Baccalaureate Certificate in Public Health
        Informatics

Dear Secretary Fielder,

Please find enclosed a proposal to offer a Post Baccalaureate Certificate in Public Health
Informatics program at Bowie State University (HEGIS 070201/CIP 11.0104).

Bowie State University developed the PBC in Public Health Informatics to address the
shortage of underrepresented communities in the informatics profession. The program was
developed in concert with the Office of the National Coordinator (ONC) for Health Information
Technology, at the Department of Health and Human Services (HHS). BSU's PBC in Public
Health Informatics multidisciplinary curriculum focuses on public and population/community
health, disease prevention, and health promotions, and is designed to prepare students for careers
in public health data analytics.

We respectfully request the Commission's consideration of this proposal.

Sincerely,

Aminta H. Breaux

Cc: Dr. Carl Goodman, Provost and Vice President for Academic Affairs, BSU
        Dr. Joann Boughman, Senior Vice Chancellor, USM
        Dr. Darlene Brannigan Smith, Interim Associate Vice Chancellor, USM
        Dr. Cheryl Blackman, Interim Dean, College of Professional Studies, BSU
        Ms. Jacqueline Cade, Manager of Institutional ad Academic Programming, BSU
        Ms. Gayle Fink, Office of Planning, Analysis and Accountability, BSU

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.*

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

Informatics is the process by which raw data turn into actionable information, which then turn into knowledge using methods, tools and concepts driven from the application of the theory and practices from computer science, information sciences, and behavioral and management sciences. Informatics is central to the practice of public health and healthcare in the 21st century, and this program aims at preparing public health informaticians which are highly in demand. According to AHIMA (American Health Information Management Association), field of health informatics includes clinical informatics, public informatics, consumer health informatics and translational bioinformatics.

The proposed Post-Baccalaureate Certificate in Public Health Informatics (PHIS) at Bowie State University (BSU) focuses on population/community health, disease prevention, and health promotions. It is founded on the Master of Science in Information Systems and the Master of Science in Nursing programs and is designed to prepare learners having a bachelor's degree for careers, particularly in public health informatics. Graduates from this program may work as public health informatics managers, specialists, system analysts, data analysts, consultants, or designers/developers in the different health systems, hospitals, academia, insurance, pharmacy, and other organizations (Joshi and et al, 2021). Public health informaticians are responsible for:

- meeting the needs of those who use data, information and knowledge by eliciting and determining their requirements.
- designing, developing, managing, and evaluating the information technology and systems that are crucial to surveillance, assessment, and assurance practice.
- designing and developing information technology and systems to support effective decision making by public health leaders.
- seeking to support the public health enterprise and improve population health. (Baker, et al., 2016)

The program aims to graduate IT or degree related professionals with public health and informatics Knowledge, Skills and Ability (KSAs), public health professionals with IT and management KSAs, or Business Professionals with IT and public health KSAs to play several roles in advancing public health. It can be either completed as a complementary to a graduate degree in information systems, computer science, nursing, MBA, and other BSU graduate programs or as a post- baccalaureate advanced specialization training for members of the current public health workforce or IT workforce in the health sector.

Targeted Learners/Students: They are learners with a bachelor's degree in Public Health, Health Science, Healthcare, Behavioral Science, Business, Computer Science, IT, or other related fields. The profile of the potential learners includes those who are highly interested in careers that apply Informatics and Technology to bring quality and better care for communities, the population and public in general. They are graduates or professionals with a:

3

- Bachelor degree or higher in public or population health, health science, nursing, behavioral sciences, and other related majors. They work as public health professionals, and healthcare professionals including nurses, pharmacists, dentists and doctors. These groups of learners need more education and training in Health Informatics, Information Technology and Systems (ITS) and Management courses.
- Bachelor's degree in IS, Computer Science, IT or related field. These groups of learners need Public Health Science Courses, Health Informatics, and Management.
- Bachelor's degree in business including management, finance, accounting, and marketing. These groups of learners need Public Health Science Courses, Health Informatics,and ITS courses.

Program's relation to BSU's mission:

Bowie State University (BSU) is a comprehensive university that provides 21st-century learners with a strong foundation for success with a well-rounded academic experience, an inclusive environment, and hands-on learning opportunities. Building on its rich legacy as a training ground for teachers since 1865, the university is committed to providing access to a high-quality education and cultivating emerging leaders who are prepared to succeed in a changing, global society.

As Maryland's first historically black public university, Bowie State University empowers a diverse population of students to reach their potential by providing innovative academic programs and transformational experiences as they prepare for careers, lifelong learning, and civic responsibility. Bowie State University supports Maryland's workforce and economy by engaging in strategic partnerships, research, and public service to benefit our local, state, national, and global communities.

The PHIS program is an innovative program which was developed in partnership with the Office of the National Coordinator (ONC) for Health Information Technology, within the department of Health and Human Services (HHS) to address the shortage and lack of diversity among PHIS professionals in the workforce. Hence, the proposed program contributes to the university's mission by empowering "a diverse population of students to reach their potential by providing innovative academic programs" and by supporting Maryland's and the nation's workforce and economy. Furthermore, the addition of PHIS program contributes to the achievement of Bowie's *FY 2019 – FY 2024 Racing to Excellence Strategic Plan*, specifically Goal 1 Academic Excellence, Objective 1.1 High-demand, innovative academic programs.

Since the signing of the Health Information Technology for Economic and Clinical Health (HITECH) Act in 2009, the US health care ecosystems have become increasingly digitalized and connected. With the recent efforts to manage the Covid-19 pandemic and Opioid crisis, the acute shortage of public health informatics professionals is revealed. As a result, workforce development to fill this gap is critical and the federal government has made it one of its top

priorities and is investing millions of dollars through the American Rescue Plan with emphasis on educatingand training more underrepresented students and workers to diversify the workforce

(https://www.hhs.gov/about/news/2021/06/17/hhs-announces-80-million-in-arp-funding-to-bolster-underrepresented-communities-in-public-health-it-workforce.html). The proposed program directly addresses this critical need.

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.*

This program is supported by the ONC/HHS 4-year grant. Implementation of the program is planned for Fall 2023. The grant supported the development of this proposal and will provide funds to hire long-term PHIS faculty and adjuncts to teach and mentor students for this program. Furthermore, the MIS department has received a new PIN to hire a tenure-track faculty for Fall 2023 who will be teaching PHIS courses as well after the end of the grant period. The existing resources in MIS department will also support the program.

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

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

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

The proposed post-baccalaureate certificate in Public Health Informatics (PHIS) meets and aligns with the university's FY19-FY24 Strategic Plan. It is aligned with Strategic Goal #1, "Achieve academic excellence supported by curricular and co-curricular experiences" and Objective #1.1, "High-demand, innovative academic programs. The program is funded over the next three years by a grant from the Health and Human Services division and will remain as a signature program at the university.

BSU is committed to ongoing administrative, financial, and technical support of the proposed program as demonstrated in the following:
- provide a new PIN position for the Information Systems department to hire a faculty member who will provide teaching, research and services in health informatics including PHIS.
- provide a new PIN position for the Nursing/Health science department to hire faculty who will provide teaching, research and services in health sciences.
- existing resources in the MIS department and College of Professional Studies will provide support to the program as both the deans and chairs endorsed the proposal.

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*

PHIS will empower disease interventions and prevention leading to better health of individuals, communities, and the public. To improve population and public health, PHIS will enable effective monitoring and surveillance, and provide access to timely and accurate data including big data, information and knowledge while safeguarding privacy and security. As a field of study, it applies the theory and practices from computing science, information sciences, and behavioral and management sciences. It is a multi-disciplinary field and is at its early stage of advancement.Hence, there exists a need for the advancement of knowledge in PHIS both from technical aspects including standardization and interoperability and non-technical aspects including outcome evaluation, privacy, usability, security and ethical use in general and in underserved and underrepresented populations.

The societal needs for public health professionals with KSAs in ITS as well as the shortage of informaticians in public and clinical health settings are well revealed during the Covid-19 response. "The limited number of public health professionals trained in informatics and technology was one of the key challenges the nation experienced during the COVID-19 pandemic," said Dr. Micky Tripathi, national coordinator for health information technology. Of these limited PHIS professionals, very few are from underrepresented and underserved populations. Hence, there is a need to develop and make the PHIS program accessible to students from underrepresented and underserved populations.

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

The 2022 Maryland State Plan for Higher Education has as one of its goals "equitable access to affordable and quality postsecondary education or all Maryland residents" (2022 Maryland State Plan for Higher Education, p. 28). Further, through an equity framework, the Plan recognizes that State's legal obligations to diversity and equity in its public education system. Central to Bowie State's mission, and in alignment with the State Plan, is the goal to empower a diverse population of students to reach their potential by providing innovative academic programs and transformational experiences as they prepare for careers, lifelong learning, and civic responsibility. With its innovative interdisciplinary curriculum that includes artificial intelligence, bioinformatics, biotechnology, biopharma, cybersecurity, data science and analytics, entrepreneurship, informational technology, nanotechnology, modernmanufacturing,

and robotics, the proposed Post-Baccalaureate Certificate in Public Health Informatics program promotes student success, innovation, and outcomes that prepare students for careers in public health informatics in just one year.

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.*
   2. *Present data and analysis projecting market demand and the availability of openings in a job market to be served by the new program.*
   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.*
   4. *Provide data showing the current and projected supply of prospective graduates.*

A public health informatician is a professional who works in either practice, research, or academia and whose primary work function is to use informatics to improve public and population health. There are many job opportunities for these individuals, and they are in high demand and are predicted to remain in high demand. The career opportunities are at the federal level, the Department of Health and Human Services (DHHS), Centers for Disease Control and Prevention (CDC), Office of Surveillance, Epidemiology and Laboratory Services (OSELS), National Center for Health Statistics (NCHS), and Classification and Public Health Data Standards Staff (CPHDSS) have job openings for Public Health Informatics Specialists. Many health systems and industries also need individuals skilled in both health and systems engineering to assist with their electronic health records and other health IT activities.

In the winter of 2022, Bowie State University commissioned Aslanian Market Research (AMR) team of Education Dynamics to assess demand and supply dynamics associated with a Public Health Informatics and Technology program. This report presents findings on program areas within the State of Maryland and the greater region (consisting of Maryland, Washington, D.C, and Northern Virginia) to help University stakeholders understand the supply dynamics in the state of Maryland and the job outcome data within the greater region (consisting of Maryland, Washington, D.C, and Northern Virginia). It also presents job outcome data in the region consisting of Maryland, the nearby areas of Washington D.C, and Northern Virginia. The results are used to provide answers to the questions under this section along with other sources as indicated below.

1. PHIS program graduates uniquely differ from IT specialists as they are required to have knowledge of public health, IT and management. They may be employed by a wide variety of industries and organizations.   These include employment in federal, state and local public health agencies, non-profit and non-governmental organizations working on population and public health, hospitals, and business and industries working on public health and health care. Some of these agencies at the federal level are the Department of Health and Human Services (DHHS), Centers for Disease Control and Prevention (CDC), Office of Surveillance, Epidemiology and Laboratory Services (OSELS),National Center for Health Statistics (NCHS), and Classification and Public Health Data Standards Staff (CPHDSS).

The level of entry for PBC in PHIS graduates is mid-level managerial or professional level serving as a manger of PHIS projects, PHIS officers, PHIS specialists, and Standardization Specialists.

2. The need for public health informatics professionals is very high. The job titles include public health informatics managers, specialists, system analysts, and data analysts. Most health informatics professionals work in a variety of health care settings including local, state, federal government agencies, public health agencies, non-profit health and medical associations, hospitals, physician group practices, pharmaceutical companies, and insurance companies. The Maryland, DC, and Virginia (MDV) region has several of these organizations that need these public health informatics professionals.

Jobs in the healthcare sector are projected to grow faster than those in the general economy. PHIS managers and professionals fall under the health services and medical managers occupation, or computer and information systems managers identified by department of Labor (https://www.bls.gov/ooh/management/computer-and-information-systems-managers.htm), where the former is projected to grow much faster than average and the latter is projected to grow faster than average. The job demands for Maryland and USA are presented as follow.

Accordingly to the Maryland Occupational Projections 2020 - 2030, - Workforce Information and Performance (https://www.dllr.state.md.us/lmi/iandoproj/maryland.shtml), the number of jobs in Maryland that requires at least a bachelor degree in computer systems analyst increases by about 12%in 2030, for computer and information systems manager increases by about 12% in 2030, for information security analysts increases by about 37% in 2030, for Medical and Health Services Managers increases by about 27.33% in 2030, for Environmental Scientists and Specialists, including Health increases by 10% in 2030 . The job prospective for both in computing and health industry with a minimum of a bachelor degree is above the average for all others.

According to the department of Labor Occupational projections, 2020-30, (https://www.bls.gov/emp/tables/emp-by-detailed-occupation.htm) the number of jobs for computer and information systems managers will increase by about 10.9% in 2030, for information system analysts by 7.0%, for information security analysts by 35%, for medical and health services managers by 32.5 %, for environmental scientists and specialists, including health by 8.4%, community health workers by 22%, epidemiologists by 29.5%, data scientists by

31.4%, and for health information technologists, medical registrars, surgical assistants, and healthcare practitioners and technical workers, by 10.5%. Furthermore, the job prospective for both in computing and health industry with a bachelor degree and higher is above the average for all other occupations.

Results of the data analysis by Education Dynamics for the Standard Occupational Classification (SOC) code in fields related to PHIS are presented as follows:

Number of Jobs in Region: Within the occupation used for this analysis, within the region there was a total of 113,457 jobs that require at least a bachelor degree for employment in 2020. This is only 45 percent of the total job market. Another 25 percent of the job market are comprised of those who have earned a masters or doctoral degree. This dovetails with earlier data indicating that an advanced degree is important for many who enter this career area. The bachelor degree employment market is 18 percent above the national average.

Number of Annual Openings in Region: Among the occupation used for this analysis, within the region there was a total of 12,005 job openings that require at least a bachelor degree for employment in 2020, about 37 percent of openings. Again, while this is the plurality of openings, another 25 percent of openings are for those with advanced degrees.

Growth in Region: In the next five years, 2020-2025, BLS predicts a regional growth of 8.5percent, greater than the expected national growth of 8.0 percent.

Job Postings in Region: Within the study region, there were 65,315 unique job postings within the region. The number of job postings is taken by "scraping" job boards to see which associated SOC code occupations require a bachelor degree for employment. While this number of job postings outpaces the number of completions in Maryland, graduates will have to compete with those who come to the region from further flung areas and those who completed degrees in other topics. Note that this 65,315 is about half of the postings in the region. Another 20 percent are tailored for those with advanced degrees.

Job Postings by Organization: Unsurprisingly, given the region, technology and health organizations have the largest numbers of job postings. These range from technology consulting (Leidos, CACI International) to health positioned organizations such as Anthem, Johns Hopkins, AstraZeneca, and Travelers.

Potential supply to the program or the prospective students: These include professionals or graduates with a bachelor degree and higher from public health, nursing and related health science programs, computer science, information systems and technology. Tables 1 and 2 present the results of market research conducted by Education Dynamics on PHIS. Across all bachelor level programs, regardless of format, institutions operating within the study region saw an increase in the number of completions from 2013-2020 within the Public Health Informatics CIP codes; with an increase of 225 percent. Additionally, across the CIP codes used in this analysis (in aggregate), there has been consistent year over year growth each year from 2013-2020. Note that there were no distance completions in 2020. All completions in 2020 were in non-distance formats.

Table 1. Degree Completion in PHIT related fields

Year	2013	2014	2015	2016	2017	2018	2019	2020	% change 2013-2022
No of completions	192	208	262	338	508	521	585	624	225%

For enrollment landscape among institutions located within the state of Maryland, the trends match the completion data as indicated in table below.

Table 2. Enrollment landscape in PHIT related fields

Year	2013	2014	2015	2016	2017	2018	2019	2020
Estimated Enrollment	1152	1248	1572	2028	3054	3126	3510	3744

In 2020, across all degree levels, institutions in Maryland had 1,627 total completions. Across all formats, three institutions in MD offered programs (by way of providing completions) at the bachelor's level at the CIP codes under investigation accounting for 38 percent of the total market in terms of completions. However, 42 percent of those who completed programs in these CIP codes earned a graduate degree (37 percent masters / five percent doctoral). Another 12 percent earned a graduate certificate, see Table 3. As such, it appears that a student who completes a program related to Public Health Informatics will need to earn some sort of post-baccalaureate credential, either a degree or certificate. Therefore, there is opportunity to enroll these students who continue on for even further education, as well as those who enter the workforce (with 38 percent earning bachelor degrees).

Racial and Ethnic Completions: In 2019, across all formats, students who identify as white made up the largest proportion of completions in the CIP codes under investigation (34%). African American are28%, Asian are 21%, Hispanic or Latino are 10%. These underrepresented groups of graduates and professionals will be targeted to produce diverse PHIS professionals.

Table 3. Degree Awarded

Degree Level	Percent of Completions
Award of less than 1 academic year	1%
Award of at least 1 but less than 2 academic years	2%
Associate Degree	5%
Award of at least 2 but less than 4 academic years	0%
Bachelor Degree	38%
Post-baccalaureate certificate	12%
Masters Degree	37%
Post-masters certificate	0%
Doctoral Degree	0%

D. Reasonableness of Program Duplication:

1. *Identify similar programs in the State and/or same geographical area. Discuss similaritiesand differences between the proposed program and others in the same degree to be awarded.*
2. *Provide justification for the proposed program.*

The proposed PBC in PHIS is a unique 18-credit program that uses knowledge, skills and abilities (KSAs) from Public Health, Information Science and Information Technology. When it is approved, it will be the second in the state of Maryland. The other related program is at Johns Hopkins University (JHU), a graduate certificate program in PHIS. The proposed program is similar to this program but with strong emphasis and coverage in IT infrastructure and data analytics to support and advance public health. Furthermore, BSU's proposed program serves a different area, demographic, andeconomic group with a primary focus on minorities, which is an important need to fill in STEMand STEM related fields. Graduates from the BS degree in health information and technology, public health, and related fields (see Table below) will be able to pursue the proposed PBC in PHIS program.

In Maryland, based on the inventory of programs in MHEC database as of November 30, 2002, there are five master's level degree programs in public health, two at JHU. There are sixty master's degree programs related to health, of which close to half of them are at JHU. Graduates of the PBC in PHIS can pursue one of these graduate programs as well.

Table 4. BS and Graduate Programs in PHIS and related fields

Institution	Program	Degree
Johns Hopkins University	PUBLIC HEALTH INFORMATICS	Post-Baccalaureate Certificate
Towson University	HEALTH INFORMATION TECHNOLOGY	Post-Baccalaureate Certificate
Coppin State University	HEALTH INFORMATION MANAGEMENT	Master's Degree
Univ. of Maryland University College	HEALTH INFORMATION MANAGEMENT AND TECHNO	Master's Degree
Johns Hopkins University	PUBLIC HEALTH	Master's Degree
Johns Hopkins University	PUBLIC HEALTH BIOLOGY	Master's Degree
Morgan State University	PUBLIC HEALTH	Master's Degree
Univ. of Maryland, College Park	PUBLIC HEALTH	Master's Degree
University of Maryland, Baltimore City	PUBLIC HEALTH	Master's Degree
Hood College	PUBLIC HEALTH	Bachelor's Degree
Johns Hopkins University	PUBLIC HEALTH	Bachelor's Degree
Salisbury University	PUBLIC HEALTH	Bachelor's Degree
Towson University	PUBLIC HEALTH	Bachelor's Degree
Univ. of Maryland, College Park	PUBLIC HEALTH SCIENCE	Bachelor's Degree
University of Maryland, Baltimore County	PUBLIC HEALTH	Bachelor's Degree

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

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

The proposed program continues Bowie State University's founding commitment to provide access and opportunity to a diverse population of students to function effectively in a highly technical, data-driven and dynamic global community. The ONC/HHS award used to develop the program and curriculum aligns with Bowie's founding commitment to academic excellence.

The proposed program will have a significant impact on fulfilling the call for high-demand programs at HBIs.

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.*

Bowie State University is the oldest Historically Black Institution in Maryland and continues to serve an under-represented minority population of students. The university promotes a holistic and coordinated approach to student success and seeks to enhance the campus culture of diversity, inclusion and civic engagement. The goals of this new program are to meet the demand for new educational options for students while increasing the number of African American/Black healthcare professionals across the region.

G.   Adequacy of Curriculum Design, Program Modality, and Related Learning Outcomes (as outlined in COMAR 13B.02.03.10):

1. *Describe how the proposed program was established, and also describe the faculty who will oversee the program.*

The curriculum follows the core and foundational competencies set by CAHIIM as applied to public health informatics, public health competencies specified by the Council on Education for Public Health, and emerging PHIS competencies identified from recent literature (Wholey and et. Al., 2018, and Joshi and et al., 2021).

It was developed using a multi-disciplinary team of faculty from health sciences, computer science, information science and systems supported by the PHIS cooperative grant. This grant enabled the formation of a successful team of faculty working collaboratively in course development and the program proposal. Input from ONC/HHS, Consortium members and current students on the proposed program goals, objectives and curriculum were gathered during several sessions where we had presentations and discussions.

The program will be overseen by a program director/coordinator from the Department of Nursing, College of Professional Studies. The coordinator will oversee the program and work with other coordinators of relevant programs in recruitment, enrollment, course scheduling and offerings, teaching and advisement and other extra curricula activities. The PBC in PHIS program will be delivered via a face-to-face modality.

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

This program targets leaners who seek a PBC in PHIS. The program goals, educational objectives and learning outcomes are presented below.

Program goals

- To educate, train and place students in PHIS in a variety of health care settings including federal government agencies, public health agencies, public health-focused non-profits including non-profit health and medical associations, hospitals, physician group practices, pharmaceutical companies, and insurance companies.
- To increase the number of public health professionals trained in public health and informatics.
- To increase representation of underrepresented communities within the public health IT workforce,
- To help graduates to prepare for any of the following industry certifications from AHIM: RHIA (Registered Health Informatics Administrator) CHDA (Certificated for Health Data Analyst), CHPS (Certified in Health Care Privacy and Security) (https://www.ahima.org/certification-careers/certifications-overview/).

Educational Competencies:

The program will be accredited by the Commission on Accreditation for Health Informatics and Information Management (HIIM) Education (CAHIIM). It follows the core and foundational competencies set by CAHIIM as applied for public health informatics, public health competencies specified by the Council on Education for Public Health, and emerging PHIS competencies identified from recent literature (Wholey and et al., 2018, and Joshi and et al., 2021).

After the completion of the program, learners/students will develop the following competencies in:
- The foundations of biological and life sciences and the concepts of health and disease
- Public health organizations, health functions, workflows and data as well as associated theories, methods, best practices relevant to the application of informatics.
- The basic concepts, methods, and tools of public health data collection, use, and analysis
- Public Health Data Management and Analytics.
- Public Health Data, Information and Knowledge Access, Use, Disclosure, Privacy, Security.
- Informatics standards including classification systems, clinical vocabularies and nomenclatures and the impact on the health care continuum.
- Effective Communication and Presentation Skills: communicate effectively, both verbally and in writing as well as visually.
- Leadership and Project Management Skills.
- Teamwork and Collaboration: Ability to work in a multidisciplinary, dynamic environment as part of a collaborative and high-functioning team.
- The underlying science of human health and disease including opportunities for promoting and protecting health across the life course
- The socioeconomic, behavioral, biological, environmental, and other factors that impact human health and contribute to health disparities

Describe the student learning outcomes:

After completion of the program students be able to:

1. Explain core public health functions, workflows and data as well as associated theories, methods, best practices and ethical and legal issues such as privacy and security. (course: PHIS 556).
2. Evaluate and select Health Information technology and applications for public and population health (course: PHIS 556).
3. Apply project management principles to manage and direct public health informatics projects (course: PHIS 556)
4. Recommend strategies and solutions that ensure confidentiality, security, and integrity related (PHIS 600)
5. Apply informatics standards appropriately for system interoperability and data/information exchange and contribute to standards development efforts in public and population health. (PHIS 656).
6. Perform data management and analytical support for population and public health including registries and dashboards for surveillance and health assessment functions using appropriate data management and analytic tools such as Python or R. (Course: PHIS 656, PHIS 680)
7. Communicate effectively, both verbally and in writing using reports, technical documents and presentations. (PHIS 556, 600, PHIS 656, PHIS 680)

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 program follows the BSU's assessment plan for graduate level program and assessment protocols. A 5-year assessment plan for this program will be developed by the faculty and will be led by the program coordinator. A course-embedded assessment strategy using rubrics will be used. Furthermore, the capstone project course, where students will synthesize, integrate, and/or apply their knowledge and skills, will be used to assess the desired student learning outcomes.

Assessment results are compiled by program faculty each semester and managed by the Program Chair and the Program Coordinator. The data are required to be reported to the BSU's Center for Academic Programs Assessment each year for review by internal peer evaluators. The full academic program review occurs every seven years in accordance with internal requirements and those of the University System of Maryland. Faculty members are evaluated annually according to parameters in the Faculty Handbook and BSU Policies and Procedures. Student course evaluations are administered each semester by the Office of Planning, Analysis and Accountability. Course evaluation results are shared with deans, department chairs and faculty to inform course and instructional improvements.

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

The PBC in PHIS has 18 credits: 12 credits of core courses, and 6 credit of elective courses. The one-year plan of study for the program are presented in Appendix A. Table 5 below provides a list of courses with title, semester credit hours and course descriptions. The program requirements include admission and graduation requirements.

The admission requirements for this program are:

- Applicants must possess a bachelor degree or higher in public health, nursing, health science, computer science, information technology and system (ITS), or other related fields from an accredited college or university with a GPA 2.5 or higher and adhere to all other criteria in graduate admission policy set by the graduate school.
- Depending upon the applicant's undergraduate educational background, prerequisite courses on ITS and/or health science may be assigned by admission committee and program coordinator/director.

The graduation requirements are a minimum grade of C in all courses and satisfying all other graduate school requirements.

Table 5. List of Courses

Course No & Title	Credit Hours	Course Description	
PHIS 556– Public Health Informatics (Pre-requisite: INSS 500 and NURS 604)	3	The course reviews the core functions and services of public health and then provides an in-depth coverage of the concepts, methods, approaches and issues related to the application of information technology and systems to population and public health surveillance, assessment, prediction, and responses as well as to health disaster planning and preparation. It covers systems principle and approach for the evaluation, design, and development of health information technology and systems for local, regional, and federal public health agencies and population-based private health care organizations such as integrated delivery systems and health insurance plans. It also covers informatics tools for communication and dissemination of public health information and knowledge.	Core

PHIS 600 - Governance, Ethical and Legal Aspects of Public Health Informatics Pre-requisite: INSS 500 and NURS 604	3	This course covers governance, security, privacy, ethical and legal aspects of PHIS and applications as well as public health policies. Topics include acquisition and usage of protected public health data, FIP (Fair Information Practice), HIPAA regulations and rules, HITEC Act, AI/ML applications in Health, Public Health Policies.	Core
PHIS 656 - Advanced Public Health Informatics Pre-requisite: PHIS 556	3	This course covers advanced topics including data management, data and analytics in syndromic surveillance systems, standards for health data exchange including HL7 (Health Level Seven International), FHIR (Fast Healthcare Interoperability Resources) and DICOM, use cases of FHIR, interoperability of SDOH (Social Determinate of Health) data, interoperability between PH and social care systems as well as applications and issues associate with application of artificial intelligence (AI) and Machine Learning (ML).	Core
PHIS 680– Public Health Informatics Capstone Prerequisites: PHIS 556 and PHIS 600	3	The capstone provides an opportunity for the student to synthesize, integrate, and apply the practical skills, knowledge, and training acquired through the program. Students are engaged in real-world projects for solving real-world problems that involve the application of public health informatics and associated issues. A semester long project is required. Wherever possible and applicable students are placed on sites independently or in a team to acquire practical experience.	Core
PHIS 670 – Health Data Analytics	3	This course covers the data science cycle and public health analytic. It covers health data sources and flow, data curation including combining multiple data streams (e.g., clinical data from electronic health records, lab results, immunizations, demographic data, utilization metrics, claims data, and data from other non-healthcare sources such as SDOH, waste-water, etc.), public health data and analytics systems, visualization, descriptive and predicative analytics, application of machine learning, text analytics,	Elective

		untended bias in predicative models, usability, security, and privacy. It uses popular analytics software, data science and analytics libraries available in Python, R or other programming languages as well as open-source data mining software. A public health data analytic project is required.	
NURS 604 – Epidemiology	3	This course introduces epidemiology and provides an in-depth study of factors that impact the health of populations. It serves as the foundation for understanding medical research, public health, and preventive medicine. Measures of morbidity and mortality used in epidemiology are examined. Research methods used in descriptive and analytic epidemiology will be described. The application of statistical models to test hypotheses and the documentation of results for epidemiological studies in the community, and the screening of diseases in the community will be explored. Content areas in epidemiology that include infectious diseases, occupational and environmental health, molecular and genetic epidemiology, and psychosocial epidemiology are analyzed. Professional issues in epidemiology will be discussed.	Elective
NURS 607 - Advanced Health Assessment	3	This course builds on the undergraduate health assessment course by enhancing the student's ability to recognize, interpret, and act on abnormal physical assessment findings in adults and children across the wellness-illness continuum. Emphasis is on the synthesis and application of selected theories, principles, and techniques from nursing and the physical and behavioral sciences essential in obtaining the database and in making a differential and nursing diagnosis of patient complaints commonly encountered in primary care settings. (Two hours of lecture and two hours of supervised practice per week)	Elective

NURS 610 - Advanced Pathophysiology	3	This course focuses on the pathophysiology of body systems and clinical manifestations of pathological alterations in structures and functions of body systems. Underlying principles common to all disease processes are addressed. This course provides the foundation for primary care family nurse practitioner practice that includes diagnosis, treatment of minor acute and stable chronic conditions, and the promotion of health of clients.	Elective
INSS 500 – Information Systems	3	This course will cover basic computer and information concepts, including general computer literacy, computer programming, and information concepts appropriate for the MIS professional. In addition, the fundamental statistical concepts necessary for professional information systems work will be reviewed. Emphasis will be placed on hands-on laboratory work that will acquaint the student with various software packages and hardware platforms.	Elective
INSS 615 – Principles and Practices in Information Systems	3	This course introduces the concepts and foundations of information systems development. A systems approach to the architecting, engineering, and management of information systems is emphasized. The course discusses the principles underlying systems modeling, design, construction, testing, and deployment. It provides the state of the art and state of the practice in information systems and software engineering, agile development, software quality and project management, change management, and Web development. The framework and technologies for building software and other systems that exhibit high reliability, usability, security, availability, scalability, and maintainability are presented.	Elective
INSS 640 – Information Systems Analysis and Design	3	This course will provide an in-depth look at all phases of information systems development. Requirement acquisition methodologies will be reviewed and evaluated with respect to different application areas. Logical design will be reviewed and implementation issues will be addressed. Data-centered as well as process-centered approaches to system design will be reviewed. Particular design methodologies, including structured design and objected-oriented design will be discussed. Life cycle as well as heuristic approaches to system development will be examined and discussed. Organizational and behavioral issues with respect to information system development will be examined. An analysis and design project will be required.	Elective

INSS 650 – Data Management	3	This course will examine database concepts and practices as they relate to business environments. Various database structures, including relational and object-oriented, will be discussed. Concepts of distributed database architecture will be explored. Design, development, and implementation of databases will be examined. Organizational issues concerning the implementation of databases will also be examined. The role of data in the decision-making process will be examined. Decision support system architectures will be reviewed, with emphasis on the database component. Issues of intelligent databases will be discussed. A database project will be required.	Elective
Other 500 or above relevant course approved by program director	3		Elective

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

   Not applicable. Students are required to have a bachelor degree.

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

   The program will seek accreditation by the Commission on Accreditation for Health Informatics and Information Management (HIIM) Education (CAHIIM).

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

   N/A

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.*

The BSU's internal process, grounded by the "shared governance", for academic program review and approval has been in practice consistently and has led to good results thus far. The same process will be used for this proposed program where department curriculum committees, department faculty, college curriculum committees, university curriculum committee, and the senate review and approve the program proposal as well as the new course proposals. Then, the provost reviews and approves it. Finally, with the president's approval, it will be submitted to USM and MHEC. Once the program is approved, information on the curriculum, courses, degree requirements, admission requirements, etc. will be added in the catalog by the registrar and made

available to the students, parents, and public. Additional information to students on technical equipment requirements, learning management system, availability of academic support services and financial aid resources, and costs and payment policies has been available on the BSU web site already.

> 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 Bowie State University's Relations and Marketing (URM) department, has the authority to review and approve content about programs and related information before posted and shared on the website, social media, pamphlets, flyers, and etc. Hence, the Dean of the College of Business and Chair of the Department of Management Information Systems provide their assurance that advertising, recruiting, and admission materials will clearly and accurately represent the proposed program and the services available. Departments do not represent their programs in any manner other than what is approved by the BSU President and MHEC. If approved, this program will be represented to current and potential students precisely in accordance with program goals, courses, facilities, and services set out by this proposal and BSU administration directives pertaining to all programs. Current programs offered by BSU have always followed this exacting standard of accurate representation to students and other stakeholders.

H. Adequacy of Articulation

> 1. *If applicable, discuss how the program supports articulation with programs at partner institutions. Provide all relevant articulation agreements.* Not applicable

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, <u>terminal degree title and field</u>, academic title/rank, status (full-time, part-time, adjunct) and the course(s) each faulty member will teach in the proposed program.*

A high quality of program faculty from several disciplines will teach the courses. Faculty from nursing and health sciences, information systems, and computer sciences departments will teach in the proposed program. There will be one Public Health Informatics faculty to be hired for a fulltime position initially using the funds from the PHIT grant. Table 6 below provides a list of faculty profiles and a list of courses they will teach.

Table 6. Faculty Profiles for the PHIS Program Courses

Full Name	Appointment Type	Degree Title	Field: Specializations	Academic Rank	Status	Courses Faculty will teach
Andrew Mangle	Tenure Track	Ph.D.	Information Systems: Cybersecurity	Assistant Professor	Full-time	PHIS 600, INSS 675
Rand Obeidat	Tenure Track	Ph.D.	Information Systems: Data Science & Analytics; Health Informatics	Assistant Professor	Full-time	PHIS 556, 656, 680 INSS 500, INSS 640, 650, 662
Philp De Melo	Visiting/ Research Professor	Ph.D.	Mathematics and computer science	Professor	Full time	PHIS 556, 656, 680
Birthale Archie	Tenure Track	DNP	Nursing Practice	Asst Professor	Full-time	NURS 604, 608, 610
Denise Jarboe	Tenure Track	DNP	Nursing Practice	Asst Professor	Full-time	NURS 604, 608, 610
Tabita Rigsby-Robinson	Tenure Track	Master	Nursing		Full-time	NURS 604, 608, 610
Azene Zenebe	Tenured	Ph.D.	Information Systems: Data Science & Analytics; Health Informatics	Professor	Full-time	PHIS 556, 656, 680 INSS 500, 662, 640, 650
Grant Erhuanga	Adjunct	Ph.D.	Biomedical Informatics-Health Information Technology	Asst Professor	Part time	PHIS 556, 656 INSS 500, 675, 658
A New Hire	Tenure-Track	Ph.D.	Health Informatics	Asst Professor	Full time	PHIS 556, 656, 680

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.*

In addition to attending local, national and international professional conferences focusing on pedagogy, faculty are also required to attend the Faculty Institute at the beginning of each semester where workshops focusing on pedagogy are offered by the Center for Excellence in Teaching and Learning. BSU offers yearly Blackboard LMS training. Currently, many faculty are undergoing training for Quality Matters review of online and hybrid courses.

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 ensureresources are adequate to support the proposed program.*

The Thurgood Marshall Library of Bowie State University supports the University's mission of teaching and learning with a collection of over 280,000 volumes (physical and electronic), over 700 academic subscription titles, an electronic portal (ResearchPort) to over 70 databases, as well as videos and DVD recordings, and experienced staff. The Library also promotes information literacy education by collaborating with the university faculty in utilizing current technology and teaching methods to enhance an instructional program that teaches library clientele how to access, evaluate, and utilize information.

As a member of the University System of Maryland and Affiliated Institutions (USMAI), Bowie State also has access to the collections of thirteen university libraries in the state of Maryland. A daily delivery between the participating libraries is provided to assist patrons in obtaining materials from other libraries in the system. Also, all registered patrons have access to interlibrary loan services, which is a resource-sharing system, for materials not available within the USMAI.

The Library's physical collection of books in the fields are typical in scope and size for a university the size of Bowie State University. This collection is presently serviceable for the instructional and research expectations upon this program's majors. To ensure that this collection is more than sufficient for background reading and research undertakings by students in all of this program's core and elective courses, the program's faculty are making requests for acquisitions of hundreds of additional volumes, and those requests will be fulfilled during the coming academic year.

K. **Adequacy of Physical Facilities, Infrastructure and Instructional Equipment**
(asoutlined 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 andfaculty offices, and laboratories for studies in the technologies and sciences.*

2. *Provide assurance and any appropriate evidence that the institution will ensure studentsenrolled 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 technologicalsupport for distance education*

Bowie State University delivers a robust technological infrastructure and a state of the art classrooms and offices for faculty and staff. The campus is home to a new $445.500 Cray supercomputer called the Sphinx (housed in the Computer Science Building) awarded through a grant from the Department of Defense U.S. Army Research Office. The University also has several computer labs across campus with each having up to 25 workstations containing standard application software and IBM SPSS Statistics version 23 that supports statistical data analysis and some of the machine learning algorithms.

The three colleges currently reside in a state-of-the-art building equipped with several computer labs with 25 to 35 PCs designed for flexible, active learning environments ideal for independent and collaborative work. The University also houses four additional computer labs in the Thurgood Marshall library containing 27 to 35 PCs along with one instructional lab.

All faculty (full time, part-time, adjunct) and students at BSU have access to the university's Blackboard LMS along with full-time staff of three who are available for technical issues and support. Furthermore, they have access to the MS Office 360 suite of applications including outlook for communication, Teams for collaboration, MS Office, Power BI 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.

   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 1 and Table 2 list the fiscal revenues and expenditures that demonstrate adequate resources for this program. The MIS Department and the Nursing Department can administer the majority of the proposed program with existing faculty members. In addition, a new Health Information Systems and Informatics faculty member will be hired using grant funds, one faculty member will be hired in the MIS department using the new PIN received in the 2023 FY budget, along with one adjunct who has expertise in the relevant subject matter. The Nursing department also received one PIN in FY 2023 to support this program. These resources allow for ease in implementation of the program. All other administrative and support services will be embedded into the departments' existing resources.

Table 1: Resources and Narrative Rationale					
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)	106,662	108,795	110,971	113,190	171,319
a. #F.T Students	10	10	10	10	15
b. Annual Tuition/Fee Rate (18 crd/yr) (in-state graduate rate is) get graduate rate=573.45	10,322	10,529	10,739	10,954	11,173
c. Annual Full Time Revenue (a x b)	103,221	105,285	107,391	109,539	167,595
d. # Part Time Students	5	5	5	5	5
e. Credit Hour Rate (tuition + fees)	$573.45	$584.92	$596.62	$608.55	$620.72
f. Annual Credit Hours	6	6	6	6	6
g. Total Part Time Revenue (d x e x f)	3,441	3,510	3,580	3,651	3,724
3. Grants, Contracts, & Other External Sources	140000	140000	140000	140000	140000
4. Other Sources	0	0	0	0	0
TOTAL (Add 1 - 4)	246,662	248,795	250,971	113,190	171,319

Reallocated Funds: N/A
Annual Tuition/Fee Rate reflects FY23 approved rates
Credit Hour Rate reflects FY23 graduate per credit hour rate and
fees with a 2% increase in the subsequent years.
Grants:
Other Sources: N/A

Expenditure Categories					
TABLE 2: PROGRAM EXPENDITURES AND NARRATIVE RATIONALE					

Expenditure Categories					
1. Total Faculty Expenses (b + c below)	134,967	137,666	140,420	143,228	146,093
a. # FTE	1	1	1	1	1
b. Total Salary	100,000	102,000	104,040	106,120.8	108,243.21
c. Total Benefits	34,967	35,666.34	36,379.67	37,107.26	37,849.41
2. Total Administrative Staff Expenses (b + cbelow)	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. Total Contractual **Adjunct**/Staff Expenses (b + c below)	7,560	7,560	7,560	15,120	15,120
a. # FTE	1	1	1	2	2
b. Total Salary	7,000	7,000	7,000	14,000	14,000
c. Total Benefits	560	560	560	1,120	1,120
4. Equipment					
5. Marketing/Advertising	1,500	1,000	1,000	1,000	1,000
6. New or Renovated Space	0	0	0	0	0
7. Other Expenses	12,000	12,000	12,000	12,000	12,000
TOTAL (Add 1 - 7)	**156,027**	**158,226**	**160,980**	**171,348**	**174,213**

1-Full-time Faculty: A new PIN is allocated for an MIS faculty

2-Admin Staff: 0

3-Assumes one adjunct in years 1-3 and two in years 4-5. Average Salary for Adjunct Faculty at $3,500 per course/semester plus 8% for fringe benefits

4- Equipment: N/A

5- Marketing and advertising costs to market program

6-New or Renovated Space: N/A

7-Average annual scholarship of $12,000 per year.

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

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

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.*

This program's courses and faculty will be evaluated using the BSU end of course evaluation survey completed by students each semester and undertaken by OPAA (Office of Planning. Analysis and Accountability) of the university. Chair and peer evaluations of faculty at least once per academic year will be done. Furthermore, the ongoing end-of-course evaluation survey will track data on students' satisfaction with the PHIS program courses and faculty. These data will be aggregated by program coordinator and chair for the program to assess its effectiveness.

Course-embedded assignments and rubrics will be used to evaluate student learning outcomes (SLOs) relevant to a course following the plan for the PBC in PHIS program learning outcomes assessment.

Student retention: Student enrollment number for the program will be monitored and retention rate will be calculated accordingly by the program coordinator with the support of the OPAA of the university.

Cost-effectiveness: enrollment numbers in various PHIS program classes will be monitored and revenue/cost will be calculated.

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

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

As Maryland's first Historically Black Institution, Bowie State University is committed to providing access to high quality higher education to African-Americans and other under-represented minorities. The goals established in the University's Racing to Excellence FY 2019 – FY 2024 Strategic Plan support student achievement and long-term viability of the institution and align with the goals in the *2017-2021 State Plan for Postsecondary Education: Student Success with Less Debt*. Specifically, Bowie continues to support educational opportunity for Marylanders (Success, Strategy 4), engage in a continuous improvement process to ensure that institutional policies and practices support student success (Success, Strategy 5), provide alternative modalities, new programs and pedagogies and streamlined student and academic support services to facilitate timely degree completion (Success, Strategy 6) (Innovation,

Strategy 9), integrate high impact practices into the student experience, including career advising and planning into internship experiences (Success, Strategy 7), partner with business, government and other institutions to support workforce development and graduate readiness (Innovation, Strategy 8), and expand support for grant participation and research (Innovation, Strategy 10). Bowie State faculty, staff, students and administrators are engaging in change management strategies and embracing experimentation so that the university can better meet the holistic needs of our students (Innovation, Strategy 11).

Bowie State University has a long-standing commitment to diversity as the institution values and celebrates diversity in all of its forms. The University community believes that its educational environment is enriched by the diversity of individuals, groups and cultures that come together in a spirit of learning. The university fully embraces the global definition of diversity that acknowledges and recognizes differences and advances knowledge about race, gender, ethnicity, national origin, political persuasion, culture, sexual orientation, religion, age, and disability. The University creates positive interactions and cultural awareness among students, faculty and staff through infusing global diversity awareness in the curriculum, expanding co-curricular programming that promotes diversity awareness and maintaining a campus climate that respects and values diversity.

O. Relationship to Low Productivity Programs Identified by the Commission:
Not applicable

P. Adequacy of Distance Education Programs (as outlined in COMAR 13B.02.03.22)
At this time, the program will be offered in a traditional, face-to-face format.

References

1. Baker, Edward L. MD, MPH; Fond, Marissa PhD; Hale, Piper BA; Cook, Jessica BA, BS What Is "Informatics"?, Journal of Public Health Management and Practice: July/August 2016 - Volume 22 - Issue 4 - p 420-423doi: 10.1097/PHH.0000000000000415 @ https://journals.lww.com/jphmp/Fulltext/2016/07000/What_Is_Informatics_.15.aspx

2. Gamache, R., Kharrazi, H., & Weiner, J. P. (2018). Public and Population Health Informatics: The Bridging of Big Data to Benefit Communities. Yearbook of medical informatics, 27(1), 199–206. https://doi.org/10.1055/s-0038-1667081

3. Joshi, A., Bruce, I., Amadi, C., & Amatya, J. (2021). Developing Evidence-based Population Health Informatics curriculum: Integrating competency based model and job analysis. Online journal of public health informatics, 13(1), e10. https://doi.org/10.5210/ojphi.v13i1.11517 Accessed on Feb 5th, 2022 from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8238051/)

4. Meyer M. A. (2019). Healthcare data scientist qualifications, skills, and job focus: a content analysis of job postings. *Journal of the American Medical Informatics Association : JAMIA*, *26*(5), 383–391. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7787353/pdf/ocy181.pdf

5. Public Health Informatics Institute. Competency for Applied PHI, accessed on 2/2/2022 from : https://phii.org/wp-content/uploads/2021/06/Applied-Public-Health-Informatics-Competency-Model.pdf

6. Weiner, J. P. (2018). Public and Population Health Informatics: The Bridging of Big Data to Benefit Communities. Yearbook of medical informatics, 27(1), 199–206. https://doi.org/10.1055/s-0038-1667081

Appendix A – Program of Study

POST-BACCULAUREATE CERTIFICATE– PUBLIC HEALTH INFORMATICS (PHIS)
TOTAL CREDITS (credits) = 18

FIRST YEAR				
FALL	credits	**SPRING**		credits
PHIS 556– Public Health Informatics **Pre-requisite: Foundational Knowledge in IT and Public Health (INSS 500 and NURS 604)** The course reviews the core functions and services of public health and then provides an in-depth coverage of the concepts, methods, approaches, and issues related to the application of information technology and systems to population and public health surveillance, assessment, prediction, and responses as well as to health disaster planning and preparation. It covers the evaluation, design, and development of health information technology and systems for local, regional, and federal public health agencies and population-based private health care organizations such as integrated delivery systems and health insurance plans as well as the application of data science and analytics (DSA) for public health. It also covers informatics tools for communication and dissemination of public health information and knowledge.	3	**PHIS 656 - Advanced Public Health Informatics** **Pre-requisite: PHIS 556** This course covers advanced topics including data management, data and analytics in syndromic surveillance systems, standards for health data exchange including HL7 (Health Level Seven International), FHIR (Fast Healthcare Interoperability Resources) and DICOM, use cases of FHIR, interoperability of SDOH (Social Determinate of Health) data, interoperability between PH and social care systems as well as applications and issues associate with application of artificial intelligence (AI) and Machine Learning (ML).		3
PHIS 600 - Governance, Ethical and Legal Aspects of Public Health Informatics **Pre-requisite: INSS 500 and NURS 604** This course covers governance, security, privacy, ethical and legal aspects of PHIS and applications as well as public health policies. Topics include acquisition and usage of protected public health data, FIP (Fair Information Practice), HIPAA regulations and rules, HITEC Act, AI/ML applications in Health, Public Health Policies	3	**PHIS 680– Public Health Informatics Capstone** **Prerequisites: PHIS 556 and PHIS 600** The capstone provides an opportunity for the student to synthesize, integrate, and apply the practical skills, knowledge, and training acquired through the program. Students are engaged in real-world projects for solving real-world problems that involve the application of public health informatics and associated issues. A semester long project is required. Wherever possible and applicable students are placed on sites independently or in a team to acquire practical experience.		3
PHIS Elective #1	3	**PHIS Elective #2**		3

Elective Courses

Select **two** elective courses in consultation with a Program Coordinator/director.

i.   **Public Health/Nursing and Behavioral Health (BH)** courses for those graduated
     fromnon-health science and related discipline and have not taken a course in principles
     and practices of Epidemiology, Pathophysiology OR Pharmacology.
     - NURS 604 – Epidemiology: Prerequisite(s*): None
     - NURS 607 - Advanced Health Assessment: Prerequisite(s): None
     - NURS 608 - Pharmacotherapeutics: Prerequisite(s): NURS 610
     - NURS 610 - Advanced Pathophysiology: Prerequisite(s)*: None

ii. **Health IT and Informatics, Data Science and Analytics Courses for those who
     havea BSc in Health and related field**
     - DANL 480 - Big Data Analytics
     - PHIS 670/DANL 470 - Health Data Analytics (New Course)
     - INSS 500 – Introduction to Information Systems
     - INSS 505 – Object-oriented Programming
     - INSS 515 – Principles and Practices of Information Systems
     - INSS 540 – Information Systems Analysis and Design
     - INSS 550 – Data Management
     - INSS 575 – Information Systems Project Management
     - INSS 663 - Decision Support Systems