Board of Regents ~ Committee on Education Policy and Student Life and Safety

Tuesday, December 3, 2024 ~ 9:30 a.m.

Zoom Details to be Provided to Committee
Public Listen-Only Access: 443-353-0686 – Conference ID: 461 923 922

Public Session Agenda

Information Item

1. Humanities across the USM

Action Items

2. Academic Program Proposals
   a. UMB: Doctor of Social Work (DSW)
   b. UMB: Master of Science (MS) in Medical and Health Studies
   c. UMB: Master of Science (MS) in AI Drug Development
   d. BSU: Bachelor of Science (BS) in Immersive Media, Entertainment, and Gaming
   e. SU: Bachelor of Science (BS) in Coastal Engineering
   f. UBalt: Bachelor of Science (BS) in Artificial Intelligence (AI) for Information Technology (IT) Operations
   g. UBalt: Master of Science (MS) degree in User-Centered Cybersecurity

Information Items

3. USM Report on Academic Program Actions Delegated to the Chancellor, AY 2024-2025 (Information)

4. Notification of Awards: Wilson H. Elkins Professorships, FY25 and USM Scholarships, AY 2024-2025 (Information)

5. Universities at Shady Grove Update: Partnership Council and Super Studio (Information)

Action Item

6. Motion to Adjourn

INSTITUTIONS // BOWIE STATE UNIVERSITY • COPPIN STATE UNIVERSITY • FROSTBURG STATE UNIVERSITY • SALISBURY UNIVERSITY
TOWSON UNIVERSITY • UNIVERSITY OF BALTIMORE • UNIVERSITY OF MARYLAND, BALTIMORE • UNIVERSITY OF MARYLAND, BALTIMORE COUNTY
UNIVERSITY OF MARYLAND CENTER FOR ENVIRONMENTAL SCIENCE • UNIVERSITY OF MARYLAND, COLLEGE PARK • UNIVERSITY OF MARYLAND
EASTERN SHORE • UNIVERSITY OF MARYLAND GLOBAL CAMPUS REGIONAL CENTERS // UNIVERSITIES AT SHADY GROVE • UNIVERSITY SYSTEM
OF MARYLAND AT HAGERSTOWN • UNIVERSITY SYSTEM OF MARYLAND AT SOUTHERN MARYLAND

UNIVERSITY SYSTEM of MARYLAND

BOARD OF REGENTS

SUMMARY OF ITEM FOR ACTION,
INFORMATION OR DISCUSSION

TOPIC: Humanities Across the USM

COMMITTEE: Committee on Education Policy and Student Life and Safety

DATE OF MEETING: December 3, 2024

SUMMARY: Today, we'll be highlighting the humanities across the USM. Recent feedback from USM institutions showed that all of our universities have programs, centers, and experiences specifically focused on and related to the humanities and that the humanities as a whole are thriving across the System.

We'll hear from three individuals about humanities on their campuses. We're joined by a Provost, a Dean, and a faculty member from three different universities to provide a full picture of what is happening across the USM related to the humanities. The panel consists of:
- Dr. Laurie Couch, Provost and Senior Vice President of Academic Affairs, Salisbury University
- Dr. Kimberly Moffitt, Dean, College of Arts, Humanities, and Social Sciences, University of Maryland, Baltimore County
- Dr. Blessing Diala-Ogamba, Chair and Professor, Department of Humanities, Coppin State University

ALTERNATIVE(S): Information item.

FISCAL IMPACT: Information item.

CHANCELLOR'S RECOMMENDATION: Information item.

COMMITTEE ACTION: DATE: December 3, 2024

BOARD ACTION: DATE:

SUBMITTED BY: Alison Wrynn, awrynn@usmd.edu; 301-445-1992

UNIVERSITY SYSTEM *of* MARYLAND

TOPIC: University of Maryland, Baltimore Proposal for a Doctor of Social Work

COMMITTEE: Education Policy and Student Life and Safety

DATE OF COMMITTEE MEETING: December 3, 2024

SUMMARY: The University of Maryland School of Social Work proposes a new Doctor of Social Work (DSW) degree. The curriculum will focus on advanced skills in treatment methods, supervision, leadership, and teaching pedagogy that are not typically included in the curriculum of Social Work PhD programs. The proposed program will also focus on research and professional writing that draws from the University of Maryland, Baltimore's (UMB)'s many educational resources. Our proposed DSW program will fill a high-demand and growing need in Maryland and build DSW skills along six clinical practice domains, completed within UMB's dynamic interprofessional learning environment over a three-year period. The six essential learning components of the curriculum are 1) Advanced clinical treatment skills such as psychopharmacology, CBT, DBT, family therapy, EMDR, etc., 2) Supervisory skills to guide and train students and social work practitioners in the field, 3) Teaching andragogy for academic classroom instruction, 4) Leadership/administrative skills, 5) Social justice and health equity advocacy, and 6) Applied research training and program evaluation.

The Bureau of Labor Statistics (2022) suggests that the demand for professional social workers will grow between 9-11% over the next five years with behavioral health having the highest growth rate. Thus, there is an ongoing and growing need for experienced and well-trained social workers. This rate of growth for social workers is beyond the national average of 5% seen for most other occupations. Thus, the demand for highly trained professional social workers will continue to remain well above average in the near future.

ALTERNATIVE(S): The Regents may not approve the program or may request further information.

FISCAL IMPACT: No additional funds are required. The program can be supported by the projected tuition and fee revenue.

CHANCELLOR'S RECOMMENDATION: That the Education Policy and Student Life and Safety Committee recommend that the Board of Regents approve the University of Maryland, Baltimore proposal to offer the Doctor of Social Work.

COMMITTEE RECOMMENDATION:	DATE: December 3, 2024
BOARD ACTION:	DATE:
SUBMITTED BY: Alison M. Wrynn 301-445-1992	awrynn@usmd.edu

University of Maryland Baltimore

Dr. Roger J. Ward, EdD, JD, MSL, MPA
Provost and Executive Vice President

Office of the Provost
220 Arch Street, Room 03-118
Baltimore, MD 21201
410 706 2477

rward@umaryland.edu

November 15, 2024

Jay A. Perman, MD
Chancellor
University System of Maryland
3300 Metzerott Road
Adelphi, MD 20783

Dear Chancellor Perman:

On behalf of the University of Maryland, Baltimore (UMB) please find attached our proposal to establish a new academic program, a **Doctor of Social Work (DSW)** within the University of Maryland School of Social Work.

The unprecedented growth of the Social Work profession now demands additional doctoral prepared teachers and supervisors to educate the next generation of clinical social workers. Our proposed DSW program will help fill this need and is consistent with the values and strategic direction of both the UMB campus and the goals of the Maryland Plan for Postsecondary Education. The DSW program promises to be a beacon of innovation, promoting entrepreneurship and interprofessional collaboration that will nurture our communities, evolve our methods of care, and promote the overall wellbeing of our citizens. Doctorate level training will enhance the professionalism and knowledge of social work practitioners, assuring accountability in their clinical work while promoting social justice and health equity for those they serve.

Should you require additional information, please contact Meghan Bruce Bojo, Executive Director of Academic Administration, at mbojo@umaryland.edu or 410-706-2055.

Regards,

Dr. Roger J. Ward, JD, MSL, MPA
Provost and Executive Vice President

cc: Dr. Judy Postmus, Dean & Professor, University of Maryland School of Social Work
        Dr. Edward Pecukonis, Professor, University of Maryland School of Social Work
        Meghan Bruce Bojo, Executive Director of Academic Administration,

UNIVERSITY SYSTEM OF MARYLAND INSTITUTION PROPOSAL FOR

X	New Instructional Program
	Substantial Expansion/Major Modification
	Cooperative Degree Program
x	Within Existing Resources, or
	Requiring New Resources

University of Maryland, Baltimore

Institution Submitting Proposal

Doctor of Social Work

Title of Proposed Program

Doctor of Social Work (DSW)	**Fall 2025**
Award to be Offered	Projected Implementation Date

	51.1503
Proposed HEGIS Code	Proposed CIP Code

University of Maryland Baltimore School of Social Work	**Meghan Bruce Bojo**
Department in which program will be located	Department Contact

410-706-2055	**mbojo@umaryland.edu**
Contact Phone Number	Contact E-Mail Address

	November 15, 2024
Signature of President or Designee	Date

A PROPOSAL FOR A NEW ACADEMIC PROGRAM at THE UNIVERSITY OF MARYLAND, BALTIMORE SCHOOL OF SOCIAL WORK: DOCTOR OF SOCIAL WORK (DSW)

Table of Contents

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.

The University of Maryland, Baltimore School of Social Work proposes a new Doctor of Social Work (DSW) degree for individuals possessing a master's in social work (MSW) with at least two years of clinical practice experience. The DSW is an advanced practice doctorate that leverages UMB's nationally recognized strength in interprofessional education (IPE) and promotes skills in clinical treatment methods, supervision of social work practitioners, leadership, and classroom teaching. While UMB offers a top 25-ranked Ph.D. program, the DSW differs from the Ph.D. in Social Work because it emphasizes the day-to-day practice of clinical social work in the community rather than research and knowledge building (Anastasi, 2012). The two types of programs are fundamentally different, but each is important to UMB implementing its mission and serving the State of Maryland.

The University of Maryland, Baltimore (UMB) is Maryland's public health, law, and human services university, dedicated to excellence in education, research, clinical care, and public service. UMB enrolls nearly 6,700 students in six nationally ranked professional schools — dentistry, law, medicine, nursing, pharmacy, and social work — and an interdisciplinary School of Graduate Studies. The University offers 97 doctoral, master's, baccalaureate, and certificate programs, and confers most of the professional practice doctoral degrees awarded in Maryland. UMB is a thriving academic health center combining cutting-edge biomedical research and exceptional patient care.

Founded in 1961, the School of Social Work was the first in Maryland to offer the MSW, and it awards over 350 MSW degrees a year. It is one of the ten largest schools of social work in the nation, and it is ranked 24th in the nation by *US News & World Report*. The school has been recognized for its work in Baltimore City. Over the years, the school has launched several innovative programs, including **Family Connections Baltimore**, which works alongside 100 families in Baltimore each year to advocate for their needs; **Positive School Center**, designed to foster positive and restorative environments in schools; **Promise Heights,** which supports the well-being of families in the Upton/Druid Heights areas of West Baltimore; and **B'more for Healthy Babies,** which focuses on educating families and caregivers through community outreach, training, and media campaigns, significantly reducing infant mortality rates.

Developing a Doctor of Social Work degree program is in alignment with UMB's mission to improve the human condition and serve the public good of Maryland and society at-large through education, research, clinical care, and service. The need for an advanced social work doctorate program (DSW) is driven by complex and evolving needs within the Social Work profession and community needs within the state of Maryland. Our program focuses on six essential clinical practice domains including:

1. Advanced clinical treatment skills (such as psychopharmacology, Cognitive Behavioral therapy, Dialectical Behavior Therapy, family therapy, Eye Movement Desensitization and Reprocessing (EMDR), and other cutting-edge, evidenced-based practice skill models)
2. Supervisory skills to guide and train students and social work practitioners in the field

3. Teaching pedagogy for academic classroom instruction
4. Leadership/administrative skills to support agency administrative roles
5. Social justice and health equity advocacy
6. Applied clinical research training and program evaluation

Notably, UMB's proposed DSW program also leverages UMB's strengths as a leader in interprofessional education (IPE) and behavioral health. UMB is a national leader in promoting IPE and team-based care in the delivery of behavioral health services to the citizens of Maryland (Pecukonis, 2008; 2013; 2014; 2019). Our campus includes the Schools of Social Work, Medicine, Nursing, Pharmacy, Dentistry, Law, and an interdisciplinary School of Graduate Studies that has cultivated a rich and diverse academic community supporting IPE efforts. UMB's Center for Interprofessional Education brings together students from each of the schools to learn together and about each other's profession and how to work together in the clinical setting. DSW students will have many opportunities to learn with and about other health care providers on campus which is consistent with national trends in behavioral health/health education. This IPE experience will prepare them to be clinical leaders and ensure that more Maryland hospitals and clinical settings can benefit from innovative thinking and collaboration between healthcare providers which will improve patient outcomes.

In addition to IPE, our DSW program will support UMB's commitment to serving the citizens of Maryland behavioral health needs. More than half of the U.S. population (approximately 169 million people), live in a Mental Health Professional Shortage Area (National Center for Health Workforce Analysis, 2023). In Maryland, 1.17 million residents, representing 28.76% of the state's population, face similar shortages (Health Resources and Services Administration, 2022). Licensed clinical social workers provide the majority of behavioral health services nationally and are in high demand within the professional workforce (Pecukonis, Cornelius, & Parrish, 2003). Meeting this pressing need requires a dual approach: expanding the pool of social work graduates while also ensuring an adequate number of social work educators.

UMB's proposed DSW program is designed as a comprehensive, three-year academic offering. The program requires the completion of 60 credits and is structured to enroll and accommodate working professionals. Courses are delivered in person, with classes held one weekend per month, from Friday through Sunday. This schedule allows students to maintain their professional and personal commitments while pursuing advanced clinical training. The design of our proposed DSW program pairs flexibility with a rigorous academic program that will benefit both students and citizens of the state of Maryland.

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

UMB's mission is to improve the human condition and serve the public good of Maryland and society at-large through education, research, clinical care, and service. UMB delivers $40 million each year in uncompensated care to the citizens of Maryland. Beyond a strong academic program, the School of Social Work is also deeply committed to community service. The Center for Restorative Change, Promise Heights, Family Connections, and the Institute for Innovation and

Implementation are all very active in helping with the social work needs in Baltimore and beyond. The SSW provides 500,000 hours of social work services a year within the state of Maryland and surrounding communities. The UMB campus, as a whole, provides 2 million hours of service to the community.

Our proposed DSW program is consistent with the mission and the values of health equity and social justice espoused by our university. Within our state, UMB remains a preeminent research institution, with a mission of educating health care professionals, conducting applied research, and providing excellent clinical care to the citizens of Maryland. Our proposed DSW program will improve the human condition, promote entrepreneurship and interprofessional collaboration that will nurture our communities, evolve our methods of care, and promote the overall wellbeing of our citizens. Doctorate-level training will enhance the professionalism and knowledge of social work practitioners, assuring accountability in their clinical work while promoting social justice and health equity for those they serve. The skills addressed in a DSW are different from those in a Ph.D. program and are tailored to improve clinical practice rather than be directed at research.

The proposed DSW program aligns with the values and strategic direction of UMB. It has strong support from key leaders, including the Dean of the School of Social Work, the Provost, and the President of UMB, highlighting its importance as an institutional priority. Additionally, the DSW program embodies UMB's mission to improve the human condition and serve the public good through education, research, clinical care, and service. By advancing social work education and practice, it aims to address critical social issues and enhance community well-being, fulfilling UMB's overarching goals.

3. Provide a brief narrative of how the proposed program will be adequately funded for at least the first five years of program implementation.

The School of Social Work (SSW) can offer the proposed degree program with existing resources and will ensure continued funding to support it. UMB leadership also shows a strong commitment to establish a DSW program and has allocated startup funds of $596,495 for Year 1 (FY26) and $652,854 for Year 2 (FY27). These funds will assure the start-up and successful implementation of the proposed DSW program and will cover essential program components including faculty salary, program planning, curriculum development, marketing of the degree, student recruitment, and essential administrative tasks and personnel to get the program up and running.

We plan to enroll approximately 18 DSW students each year of our three-year program. This will ultimately create three cohorts of students for a total of 54 students. We anticipate being self-sufficient by year three (FY28). As described below, we anticipate strong enrollment from alumni of our MSW program.

4. Provide a description of the institution's a commitment to:
a) Ongoing financial, administrative, and technical support of the proposed program:

Financial support: The UMB campus has a history of supporting and sustaining new degree programs. As noted previously, the administration is providing over $1.2 million in startup funds for the first two years of program development and implementation. This is a significant financial

investment and illustrates an understanding of the importance of the DSW to the Social Work profession as well as a commitment to appropriately resourcing its success.

Administrative Supports: The Dean and faculty of the SSW support the goals and objectives of the DSW program and have been active in creating the program's curriculum. The SSW has existed since 1961 and has the longest running MSW program in the state. During our 55-year history, the SSW has developed sophisticated administrative structures that support competency-based education and student success. The majority of administrative support will be provided via the departments of academic affairs, admissions, registration, and the Dean's office in the SSW. The campus bursar will assist with translating and establishing credit hours needed to graduate, tuition cost per credit hour and provide resources for financial aid. Likewise, the university registrar is responsible for assuring that students meet all requirements for graduation and ultimately certifies each student's degree status.

Within the SSW, there are formal administrative structures that provide guidance and assist in recruitment and admission of students, hiring of personnel, arranging faculty teaching assignments, developing curriculum, program planning, marketing, budget management, fundraising and provision of student support and DEI (Diversity, Equity and Inclusion) services, etc. The SSW will provide all necessary student support services and the faculty, and personnel necessary for program operation. The SSW will also provide the physical space and technology to accommodate in-person and online instruction.

Technical support: There is ample technical support for the proposed DSW. The SSW has a highly trained and competent clinical teaching faculty that will serve as the primary architects of the DSW curriculum. The Informatics Office is a core source of technical support for students and faculty at the SSW, and consists of the Computer Center, the Computer Training Classroom, computer services, IT services, and the Media Center. It further maintains the audio, video, and computer technology that supports the school's learning and research environments.

In addition to the Informatics Office, the IDEA Team is another source of technical support at the SSW. The IDEA team provides services and support in instructional design, e-Learning, assessments, and online learning technologies for faculty, staff, and students. These departments also provide 24/7 access to web-based help pages, tutorials, and systematic documentation for students. Each of these support services can be accessed via email and phone and can troubleshoot with screen sharing as needed. In addition, our DSW trainees will benefit from technical support at the campus level such as the universal helpdesk (for login issues, email, zoom, etc.).

b) Continuation of the program for a period sufficient to allow enrolled students to complete the program:

If for some unforeseeable reason UMB discontinues the DSW curriculum, UMB is committed to a teach-out plan for all enrolled students so they may complete the program and earn their degree.

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:

According to Maryland law (§10–204), public institutions of higher education shall: (1) "Provide postsecondary education to students; (2) Transmit culture and extend knowledge through general higher education; (3) Teach and train students for careers and advanced study; (4) Protect academic freedom; (5) Promote civic responsibility; (6) Enhance economic development of the State through research, training, and extension services to business and industry; (7) Provide public services for citizens of the State; and (8) Assure that women and minorities are equitably represented among faculty, staff, and administration.

Our proposed DSW program is consistent with these goals. For example, the proposed program will increase participation in postsecondary education by expanding the availability of a flexible, unique, and innovative curriculum design. Since we will offer our DSW program within an in-person classroom model held on weekends (Friday through Sunday once per month), working professionals will be able to pursue a clinical doctorate while remaining employed. The DSW program will prepare learners to advance their careers and work in supervisory and teaching positions supporting social work education. Attaining a DSW will also support a globally competitive, entrepreneurial workforce, since many of our graduates will develop innovative psychotherapy practice and/or nonprofit programs within Maryland communities and beyond.

According to the 2018 statewide review of behavioral health workforce report "federal projections indicate a 31% deficit of needed social workers…workforce shortages limit capacity in rural areas of the state, while providers in high-density areas lack the resources to retain staff" (Maryland 2019). The Maryland Occupational Projections for 2022-2032 show an increase of 13.84 percent for social workers in postsecondary work. Unfortunately, the growth of BSW and MSW programs has not been accompanied by a similar growth in doctoral-trained clinical social work instructors and supervisors. Implementing a DSW program will directly address this gap by supporting the development of more doctoral-trained clinical social work instructors, ensuring a stronger pipeline of qualified educators to meet the increasing demand.

In addition, the COVID-19 pandemic has taken a toll on the general population's mental health and has precipitated a dramatic increase in the demand for skilled mental health providers. The aftereffects of the COVID-19 pandemic will reverberate through our communities for years to come requiring more social work services. Similarly, social work programs across the country are now in need of highly skilled teachers and supervisors. Our proposed DSW will respond to this growing demand by training doctoral prepared Social Work practitioners and supervisors with advanced skills and expertise in behavioral health.

In response to these needs, DSW programs are growing in number nationally. Our proposed three-year, in-person, 60-credit DSW program will help to meet this growing need in Maryland by training advanced practitioners. There are many social work practitioners licensed within the State that show an interest in pursuing this degree and meet our admission requirements. For example, the Maryland Board of Social Work Examiners currently reports 11,241 LCSW-C social workers licensed in Maryland with an additional 5,579 LMSW's licensed within Maryland, who within 1-2 years will be eligible for the LCSW-C and thus meet an essential admission requirement for the DSW.

In addition, UMB's SSW alumni association has over 11,000 members, most at the LCSW-C level. Our MSW program graduates over 350 MSW students each year, which makes us one of the largest schools of social work in the nation. Our graduates are active in continuing education and postgraduate education experiences at the School of Social Work. We anticipate that many of them will apply for the DSW.

While Maryland's demand for highly trained social workers continues to grow, the state currently offers only one DSW program. **This limited access may compel students to explore out-of-state options, which can create barriers to both personal advancement and Maryland's ability to retain top-tier professionals.** To ensure Maryland's workforce meets the increasing demands of advanced social work practice and leadership, it is crucial that we expand opportunities for in-state doctoral education.

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

The Maryland Plan for Postsecondary Education establishes three primary goals: 1) Student Access: Ensure equitable access for affordable and high-quality education for Marylanders; 2) Student Success: Develop and implement practices and policies that assure student success; and 3) Innovation: Foster innovation in all aspects of higher education to improve access and student success. The Maryland State Plan for Education also supports the expansion of education programs that train mental health professionals, due to the added demands related to the COVID-19 Pandemic.

The University of Maryland, Baltimore (UMB) is committed to Priorities 5, 6, and 7 under the theme of Student Success. First, aligning with Priority 5, UMB is committed to high-quality postsecondary education in Maryland. As the largest School of Social Work in the state, UMB's proposed DSW program has an innovative curriculum fully aligned with its current commitment to high-quality education and student success. The curriculum in the DSW program will teach innovative methods of psychotherapy, supervision, instruction, and administrative leadership within a framework of social justice, equity, diversity, and inclusion.

In alignment with the theme of Student Success and Priority 6, the proposed DSW program at UMB will support timely completion of an academic program by offering a curriculum designed to accommodate working professionals. By allowing DSW students to remain in their jobs while pursuing advanced education, the program ensures that their career trajectory, income stream, and service delivery are uninterrupted. This innovative approach not only makes advanced skill development accessible to social workers who might otherwise be unable to pursue a doctorate, but it also positions UMB as the only provider of an in-person DSW program in Maryland. Additionally, weekend course offerings that align with the students' work schedules further support access and success, reinforcing the program's commitment to lifelong learning and professional growth.

In support of the theme of Innovation and Priority 8, obtaining a DSW enhances the role of postsecondary education as a platform for ongoing lifelong learning by providing advanced

education that is directly applicable to a social worker's current practice and aligns with workforce needs in the state. The DSW program allows professionals to deepen their expertise, learn innovative methods, and develop leadership and administrative skills without interrupting their careers. This continuous engagement with advanced education enables social workers to evolve with the profession, stay current with emerging trends, and maintain a commitment to personal and professional growth throughout their careers.

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 for graduates of the proposed program.

Experienced clinical social workers are in high demand from both private and public institutions both broadly and within areas of focus such as behavioral health, healthcare, leadership, and education. The Maryland Occupational Projections for 2022-2032 show an increase of 13.84 percent for social workers in postsecondary work and the Bureau of Labor Statistics (2022) suggests that the demand for professional social workers will grow between 9-11% over the next five years with behavioral health (mental health) having the highest growth rate. There is an ongoing and growing need for experienced and well-trained social workers. The rate of growth for social workers is beyond the national average of 5% seen for most other occupations. Further, the demand for highly trained professional social workers will continue to remain above average in the near future as employment of social workers in healthcare is projected to grow 17% by 2028 (BLS, 2020).

DSW graduates are often employed in supervisory positions (22.9% of graduates) and clinical practice settings (17.7%). Additionally, employment (both part-time and full-time) of postsecondary social work instructors is projected to grow 11% from 2018 to 2028. Salaries for DSW graduates will remain highly competitive and higher than what can be obtained with an MSW. The National Association of Social Work estimates that DSW salaries are up to $25,000 more than MSW (NASW, 2015). Salary for DSW graduates ranges from $75,000 to $127,760 (average = $81,000) nationally, in Maryland the average DSW salary is $81,000. This is compared to average salaries for MSW graduates of $68,000 (BLS, 2022).

Focusing in on subspecialties, according to Bureau of Labor Statistics (2020), the mean salaries of exemplary employment positions are: Medical and health services managers ($115,160); Social advocacy organization executives ($114, 040); and Government agency managers ($103,000). Further, the median salary for social work instructors in 2019 was $72,070 (BLS, 2020).

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

Like other allied health fields, the movement towards the doctorate degree has been a significant theme within social work literature (Apgar, 2020; Edwards et al., 2015). The DSW aligns with workforce needs, and it is noteworthy that other health professions have already developed clinical doctorates to meet similar practice and training needs. For example, advanced clinical degrees at the doctoral level are seen in nursing (CRNP), occupational therapy (OT), pharmacy (PharmD),

psychology (PsyD), physical therapy (DPT), physician assistant (DMSc) and nutrition (DSN). For each of these professions, the need for skilled clinicians and educators is addressed by creating practice-focused doctorates. The DSW will fill this need for the profession of Social Work. In turn, these highly trained social work professionals will provide improved and comprehensive behavioral health care services to Marylanders and excellent educational experiences for social work trainees throughout the State.

This momentum and pathway to the DSW characterizes the future of professional social work in this country (Pecukonis, 2003). For example, the Council on Social Work Education (CSWE, 2024) is now finalizing national accreditation standards for DSW programs. In addition, CSWE has recently qualified their long-standing position of defining the MSW as the profession's terminal degree. This clearly makes room for the proliferation of the DSW degree as a new and potential terminal degree for the social work profession (CSWE, 2023). Social work practitioners themselves also fuel the need for doctoral prepared clinical social workers.

In the 2018 workforce report, the Maryland Public Behavioral Health System (BPHS) highlighted a significant shortage of "providers trained in co-occurring disorders…. and culturally and linguistically competent providers" (Maryland, 2019). Maryland House Bill 615, Chapter 392, established a workgroup tasked with identifying and addressing the shortage of behavioral health professionals from underrepresented communities in Maryland. One of the key strategies to address this shortage is to encourage students from underrepresented groups to pursue higher education in behavioral health fields.

Demographic data suggests that Doctor of Social Work (DSW) programs are particularly effective in attracting older, more experienced social workers and underrepresented minority applicants (CSWE, 2023). Nationally, nearly 75% of DSW applicants are 35 years of age or older. Additionally, a significantly higher percentage of DSW students are African American (35.8%) compared to Ph.D. applicants in Social Work programs (21%) (CSWE, 2023). This indicates that DSW programs can be more appealing to African American/Black students, who are currently underrepresented in doctorate-level leadership positions within social work. Increasing opportunities for DSW education will play a crucial role in addressing this demographic gap. By having two DSW programs in Maryland we can ensure that the leadership in the social work profession better reflects the identities and experiences of the communities served. This alignment is essential for fostering a more inclusive and effective behavioral health workforce, ultimately leading to improved outcomes for diverse populations.

The demand for *doctoral prepared social workers* is projected to increase 15% by the year 2030 (US Bureau of Labor Statistics, 2022). Edwards (2010) reviewed the findings of the Task Force on the DSW Degree and concluded that "*The profession of social work will be well served to have an abundance of doctoral level practitioners to train the next generation of social work practitioners and provide expert services.*" A recent national survey sampling all social work graduates in 2018 (Council on Social Work Accreditation, 2019), suggests that *over 40% of these graduates intend to enroll in a DSW program* (CSWE, 2019).

This workforce gap highlights the urgent need for enhanced training and educational opportunities for social workers. Currently, Maryland has 11 fully accredited social work programs. However,

only one Doctor of Social Work (DSW) program exists, which is located at Morgan State University (MSU) and began in the fall of 2023. Of the 11 institutions, eight offer the Bachelor of Social Work (BSW) degree exclusively, serving as feeder schools for Master of Social Work (MSW), Ph.D., and now DSW programs.

Strategically expanding the number of DSW programs will help address the shortage of doctoral-prepared social workers, providing a larger pool of professionals equipped to tackle complex social issues like behavioral health disparities and culturally responsive care. An additional program will create opportunities for underrepresented groups to advance in the field, diversify leadership, and improve care for marginalized populations. Additionally, increasing DSW offerings will improve access to education by offering an additional modality, allowing more practitioners to pursue advanced education while serving their communities. These programs will also foster innovation, enabling institutions to create specialized curricula that address emerging social challenges.

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.

There is ample and reliable data on the need for a DSW program including a market study with the EAB and regional employment projections via the Bureau of Labor Statistics. To ensure program viability and prior to developing this proposal, UMB collaborated with EAB to conduct a market analysis assessing the need to pursue a DSW by social workers in the State of Maryland. The full market analysis is contained in *Appendix A.* Findings suggest strong employer demand for DSW graduates within the region and recommend the development of a DSW program at UMB. The EAB found regional demand for doctoral-level social work professionals grew an average of 4.51% between December 2018 and November 2021, outpacing the average growth for all doctoral-level professionals (i.e., 1.59%).

The market analysis also evaluated the top skills requested of doctoral level social workers in 980 job postings listed between December 2020 – November 2021. Findings from the analysis identify the need for clinicians with "expertise in the provision of behavioral health services" as the most requested job skill (46.33%). Interestingly, the top employer looking for doctoral prepared counselors was "Thriveworks" which is primarily an online psychotherapy program. This is consistent with the growing telehealth networks providing services. Telehealth skills (24.29%) are also highly desirable by potential employers. This analysis suggests a growing labor market and demand for social work professionals to fill those slots.

Finally, the market analysis identified "healthcare and social assistance agencies" as the top industries looking for doctoral-trained social workers (55.51%). These favorable trends add further validity to a growing demand and labor market for doctoral prepared social workers.

In addition to the EAB, Bureau of Labor Statistics (BLS) regional employment projections through 2031 suggest that Social Work will grow faster than the average of other professions. BLS suggests that the aftermath of the COVID-19 pandemic will continue to increase the demand for mental health services throughout the United States. Additionally, the BLS anticipates that behavioral health services will be in high demand in the future due to the aging population, the trends towards

community based primary care, and the use of tele-behavioral health. Our proposed DSW program can assist in supplying personnel to meet this employment need.
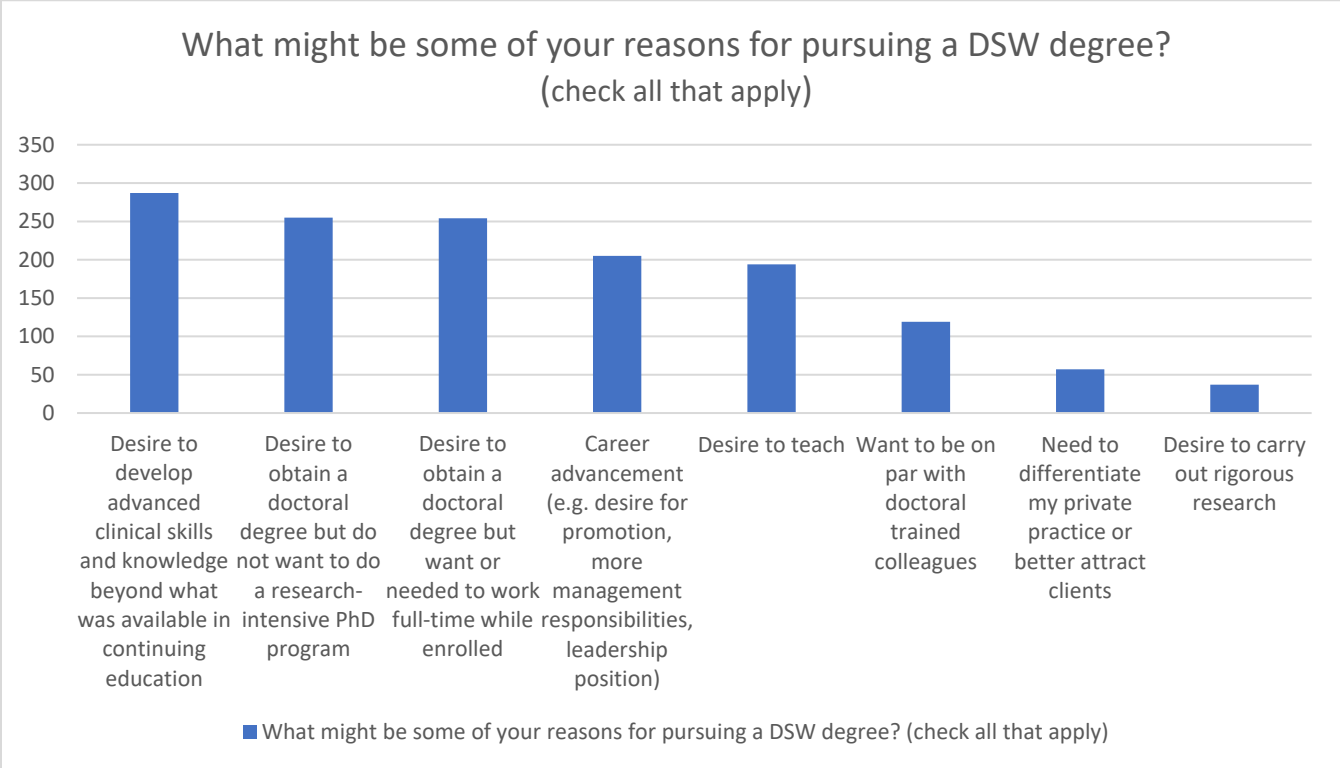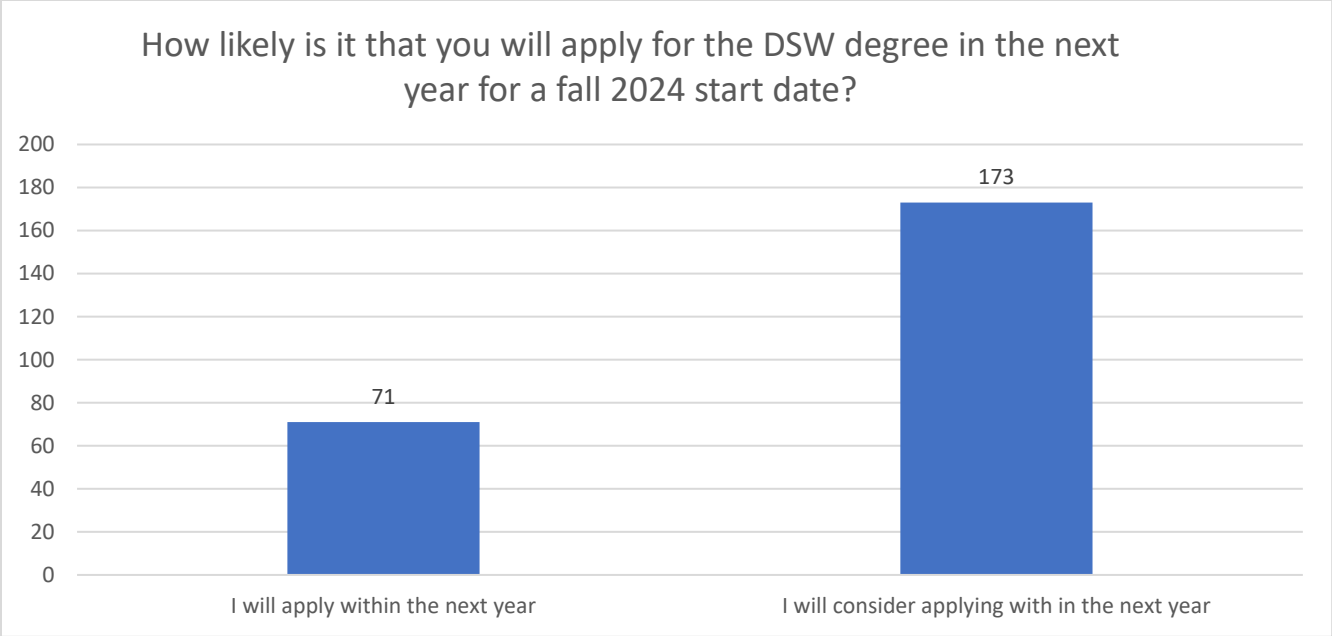
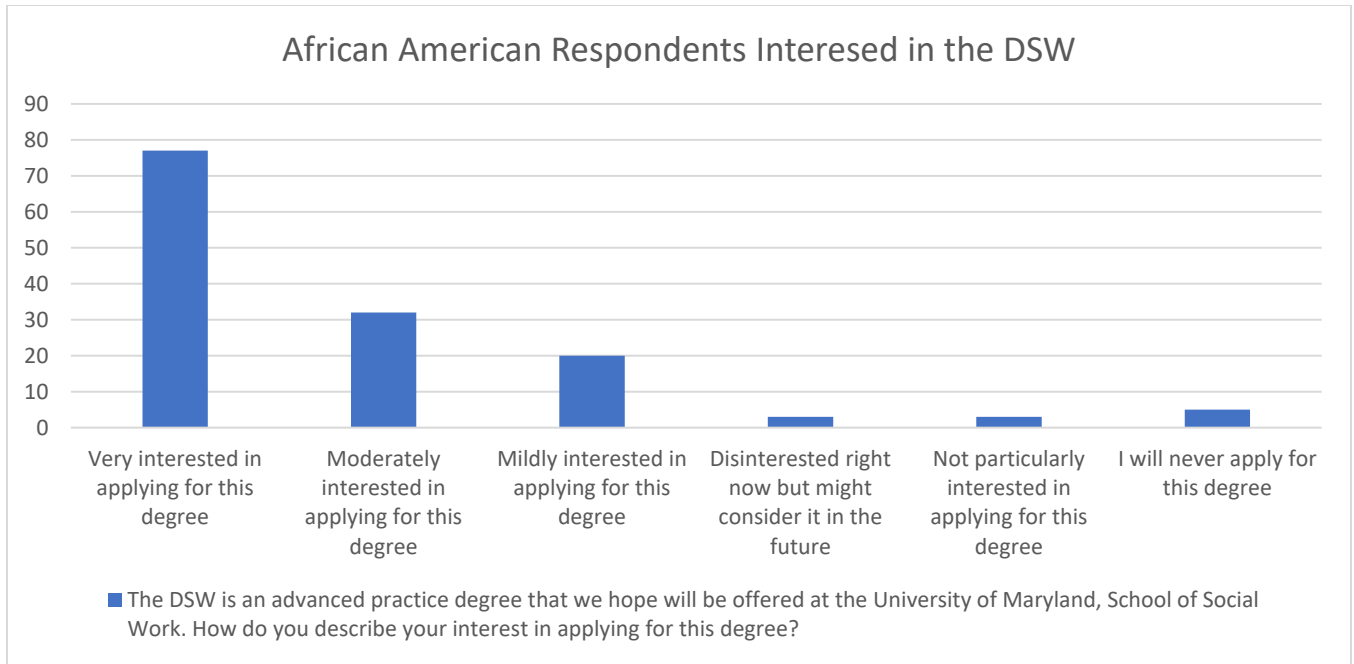**4. Provide data showing the current and projected supply of prospective graduates.**

In addition to an EAB market study and reviewing BLS data, we assessed the interest and need for a DSW in Maryland through a detailed survey of the UMB SSW alumni. This survey can be seen in Appendix B. Following three successive emails, we received 620 surveys that appear representative of our alumni. Approximately 19.5% of surveys returned contained missing data or were duplicative and not used in the final analysis.

Over 66% of respondents said they were interested in a practice based DSW, and not a research-based PhD. Approximately, 67 % wanted to complete their studies while maintaining full time employment. Findings note that over 72% of respondents have either a moderate or a significant interest in pursuing a DSW. Over 42% described themselves as being extremely interested in the DSW degree. Approximately 73 respondents or 15% of the sample noted that they would "definitely apply" for the next academic year. Another 169 alumni or 34% of the sample noted that they would "definitely consider applying" within the next 12 months. This finding suggests an ample supply of potential applicants, given that the program will only admit 18 people each year. Approximately 42% of African American respondents noted that they were very interested in applying for the DSW. In general, these findings suggest a strong interest from SSW alumni in pursuing a doctorate in Social Work.

Demographic data notes that 89% of respondents were female with 37.2% describing themselves as African American. Hispanic/Latin and African American respondents accounted for over 45% of the entire sample. The age of alumni ranged from 22 to 86. The average age of respondents was 44 years (standard deviation = 12.7 years). Notably, the average number of years since graduation from an MSW program was 15.4 years, with most respondents working in behavioral/mental health specialty areas (35.2%).

A common refrain qualitatively was, "We have waited a long time for this type of program at Maryland and we want to take full advantage of the opportunity and support its development." The number one overall reason for returning to school for a DSW was to "enhance their clinical practice skills" (75.1%).

How likely is it that you will apply for the DSW degree in the next year for a fall 2024 start date?

- I will apply within the next year: 71
- I will consider applying with in the next year: 173

What might be some of your reasons for pursuing a DSW degree?
(check all that apply)

- Desire to develop advanced clinical skills and knowledge beyond what was available in continuing education: ~287
- Desire to obtain a doctoral degree but do not want to do a research-intensive PhD program: ~255
- Desire to obtain a doctoral degree but want or needed to work full-time while enrolled: ~254
- Career advancement (e.g. desire for promotion, more management responsibilities, leadership position): ~205
- Desire to teach: ~194
- Want to be on par with doctoral trained colleagues: ~119
- Need to differentiate my private practice or better attract clients: ~58
- Desire to carry out rigorous research: ~38

■ What might be some of your reasons for pursuing a DSW degree? (check all that apply)

African American Respondents Interesed in the DSW

(Bar chart values by category)
- Very interested in applying for this degree: ~77
- Moderately interested in applying for this degree: ~32
- Mildly interested in applying for this degree: ~20
- Disinterested right now but might consider it in the future: ~3
- Not particularly interested in applying for this degree: ~3
- I will never apply for this degree: ~5

■ The DSW is an advanced practice degree that we hope will be offered at the University of Maryland, School of Social Work. How do you describe your interest in applying for this degree?

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.

There is only one other DSW program in the State of Maryland, located at Morgan State University (MSU). Their DSW program enrolled its first cohort in Fall 2023 and is delivered online with a significant focus on social policy, community organizing, and advocacy, preparing graduates to serve urban populations.

MSU describes the mission of their program as follows on their website:

"The DSW program at Morgan State University prepares experienced MSW practitioners for advanced social work practice and human service leadership with urban individuals, families, and communities. The intersections of racial, economic, and gender-based oppression disproportionately place urban individuals, families, and communities at risk of experiencing social and mental health problems. This disproportionality represents a major social injustice that unfairly diminishes the ability of urban individuals, families, and communities to demonstrate their vast positive potential.

Using this conceptual framework as a guide, Morgan's DSW program is focused on addressing the unjust educational, behavioral health, and additional healthcare systems that have created barriers to maximum social, economic, and psychological functioning for urban populations. The DSW program at Morgan also relies heavily on culturally competent intervention models that affirm and build on the experiences and perspectives of historically oppressed communities. Applicants interested in interacting with and engaging urban individuals, families, and communities utilizing a

culturally inclusive and strengths-based perspective are encouraged to apply."
(Reference: https://www.morgan.edu/doctorate-of-social-work/mission-and-goals)

Most, if not all, clinical DSW programs across the nation have adopted courses such as advanced clinical methods, applied research, teaching, leadership, supervision, and some type of capstone project. However, each institution can tailor their programs to the needs of their student groups and institutional mandates and strategies. Although UMB and MSU have a few courses with similar sounding names, their content, structure, and methods of delivery and assessment are quite different and will attract different students. See Appendix C for a detailed course- by-course analysis between UMB and MSU.

Our proposed DSW program is differentiated from MSU's in several key ways:

- **In-person v. online:** UMB's proposed DSW program is a fully in-person educational experience. Consequently, this approach will attract students who prefer an in-person learning environment over an online degree. Having another modality of learning will only add to the depth of the educational ecosystem and will honor different learning styles.

- **Length of program:** UMB's proposed DSW will require 60 credit hours, compared to MSU's 36-credit program, and each core educational component will be supported by a lab or practicum experience. These differences in curriculum and delivery methods will attract different student audiences and provide students with options not available from a fully online curriculum.

- **Leveraging strength in IPE:** UMB's proposed DSW program leverages its tremendous strength in Interprofessional Education (IPE). This collaborative approach is a true strength, and a value add as it prepares future professionals to work in multidisciplinary teams, improving patient outcomes and promoting better health system functioning. Social work, by way of its training and use of a biopsychosocial model, is uniquely prepared to serve as a member of the health care team and continue to evolve as a leader in the IPE movement. While maintaining the values of the Social Work profession, we aim to include instructors from the schools of Pharmacy and Medicine (Psychiatry, Public Health) to co-teach topics such as psychopharmacology, behavioral psychophysiology, neuro anatomy and models of psychotherapy and mental health diagnoses, etc. There is evidence that behavioral health is nested within and moderates a person's physical health. Likewise, a person's physical health status influences their psychological adaptations and wellbeing. To our knowledge, no other DSW program in the country has an interprofessional training focus, which makes our program unique in its scope and educational opportunities.

- **Curriculum**: MSU's curriculum focuses on healthcare for the underserved, technology, human behavior, clinical practice, entrepreneurship, non-profit management, fundraising, workforce development, and spirituality. These courses are primarily macro-focused and aimed at population-based interventions. MSU emphasizes the historical and cultural traditions in diverse populations of color and how social institutions and policies contribute

to problems such as structural racism. This differs from UMB's curriculum, which has a broad focus with emphasis on behavioral health, advanced clinical skills, teaching, supervision, and leadership.

Attribute	UMB DSW Program	MSU DSW Program
Delivery Format	Fully in-person, weekend	Fully online
Focus Areas	Broad – Behavioral health, advanced clinical skills, teaching, supervision, leadership. Leverages UMB's strengths of Interprofessional Education	Focused on Urban - Social policy, community organizing, advocacy
Clinical	Clinical focus	Some clinical focus but primarily focused on Policy change and advocacy
Hands-on Training	Simulation and live supervision	Not specified
Credit Hours	60 credit hours	36 credit hours
Target Students	Prefer in-person, hands-on learning	Prefer online learning
Length of Degree	3 years	3 years

By offering both online and in-person programs, Maryland can cater to a diverse range of learning preferences and needs, ensuring that all students have the opportunity to succeed. Blended or hybrid models, which combine elements of both online and in-person instruction, also present a viable solution for accommodating various learning styles. These models can provide the flexibility of online learning with the structured support of in-person classes, offering the best of both worlds. In this way, Maryland can foster a more inclusive learning environment that maximizes student engagement and success across different educational settings.

Online learning is highly effective for students who excel at managing their time, setting goals, and regulating their study habits (Broadbent, 2015). These self-regulated learners are able to structure their own study schedules, prioritize tasks, and stay organized, which are crucial skills for succeeding in the less structured online environment. Without the physical presence of instructors

or classmates, time management becomes a key factor in ensuring that students meet deadlines and stay on track with course materials.

Research further highlights that learners who are intrinsically motivated—those driven by an internal desire to learn rather than external rewards—tend to engage more deeply with course content and are more likely to persist through challenges in online learning (Artino, 2010). Students who are comfortable using technology can adapt more quickly, allowing them to focus on learning rather than grappling with technical barriers (Kennedy et al. 2008). However, lack of access to technology or insufficient digital skills can be a significant barrier for some students, highlighting the need for equitable access to the necessary tools and support.

While online learning offers flexibility and independence, it may not be a learning style that will suit all students. Some learners benefit from the structured environment and real-time interactions provided by in-person classes. These students may find it easier to engage in discussions, collaborate with peers, and receive immediate feedback from instructors in a traditional classroom setting. The physical presence of peers and instructors can create a sense of community and accountability that fosters engagement and motivation.

We anticipate no negative impact on MSU's DSW program or applicant pool due to the significant distinctions between the programs, the size of the audience of prospective students, and the ability for comparable neighboring states to also host multiple DSW programs. With over 11,000 clinical social workers licensed in Maryland, there is ample demand to support both programs. By offering only one DSW program, Maryland limits opportunities for students seeking this advanced degree. In contrast, states within the Mid-Atlantic region, such as Pennsylvania and New York, host multiple DSW programs that meet diverse student needs without creating enrollment competition. This demonstrates that complementary DSW programs can effectively coexist within the same state. The national trend supports the growth of multiple DSW programs within states. Just as a single MSW program cannot meet the needs of an entire state, there is a growing need for multiple DSW programs to serve a broader range of students and professional demands.

Our goal is to join MSU in offering the full spectrum of social work degrees to serve both students and in turn citizens of the state of Maryland. By doing so, we aim to meet the educational and service needs of the state more effectively. Expanding the availability of these programs will help address the critical shortage of trained providers, particularly those who are culturally and linguistically competent, and ensure that the behavioral health workforce is better equipped to serve Maryland's diverse population. This would also allow the region to have a stronger voice in advocating for policies that support social work education and practice, leading to more effective advocacy for resources and support at the state and national levels.

2. Provide justification for the proposed program:

As a nationally ranked School of Social Work, we are committed to staying at the forefront of social work education by cultivating leaders who drive transformative change in both practice and policy. A school of our caliber must not only reflect excellence but also push the boundaries of innovation to maintain leadership in the field. In response to the increasing complexities of social work practice, we recognize the imperative to expand our academic offerings with the introduction of a

Doctor of Social Work (DSW) program. This program will ensure our graduates are equipped with advanced skills to address societal needs at local, national, and global levels, integrating leadership, advanced practice, and policy development to shape the future of the profession.

The University of Maryland School of Social Work (SSW), established in 1961, has grown to become one of the largest and most respected schools of social work in America. The SSW graduates over 350 MSW students each year, is the largest in the state and consistently ranked in the top 25 schools of social work in the country. Students come to our school from over 20 states, the District of Columbia, and several foreign countries. The SSW has over 80 full-time faculty members, and the publication records of our faculty indicate the high caliber and productivity of these scholars. Further, the SSW has one of the largest and strongest macro-level programs of study in the country. With the expanding need of trained social workers, the state of Maryland approved $120 million to be used for a new SSW building. Emphasizing the University's commitment to sustainability, the building will include solar panels, geothermal energy, and green space.

The UMB SSW is well positioned to be a leader in developing innovative curriculum in DSW education based on our talented faculty and robust resources, and is justified for the following reasons:

- The ongoing and evolving mental health needs of Marylanders require highly skilled doctoral prepared practitioners who can supervise, educate, and train the next generation of social workers.
- There is a clear interest and need expressed by Maryland licensed social workers for opportunities to develop administrative and leadership skills that will advance their careers while remaining gainfully employed.
- There is a need for highly trained and doctoral prepared clinical instructors/supervisors to teach in the 11 social work education programs in Maryland.
- The proposed DSW program is consistent with the mission of the University and its strategic plan to serve the citizens of Maryland.
- An alumni survey documented a significant expressed need for a clinically focused, in-person DSW program in Maryland.
- There is only one approved DSW program in the State with a focus on promoting social justice with urban populations of color. UMB has a strong clinical focus which will enhance the behavioral health of the state.

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.

We do not anticipate the proposed Doctor of Social Work degree at UMB will affect the implementation or maintenance of the only Doctor of Social Work program located at Morgan State University (MSU). Both institutions are committed to advancing social work education and practice; we believe our program will complement rather than compete with the existing program at MSU. There are many opportunities for collaboration between MSU and UMB, and we believe that through collaboration and cooperation we will strengthen the social work education landscape in

Maryland without impeding the progress or success of existing programs. Our interest is to support the MSU program, as each of our programs continue to establish and evolve.

We would value establishing a relationship with MSU that will support both institutions' education programs. Establishing collaborative relationships can be incredibly beneficial for educational programs. We believe that working together, sharing ideas, resources and jointly educating our students will enhance the mission of both institutions and better serve the citizens of Maryland.

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.

Our proposed DSW program will not affect the uniqueness and institutional identities of a HBIs or impact its enrolled students in any negative way. In addition, we as a Primarily White Institution (PWI) in Baltimore City are committed to contributing to the education of anti-racist/anti-oppression skills, values, and attitudes of social work leaders, teachers, clinicians, and supervisors. We owe this to our city, our state, and our profession. We seek to be a good partner and ally to all HBIs. We recognize the critical nature of MSU's contributions in this space, and have deliberately re-focused our curriculum to avoid duplication, while addressing important workforce needs of the state. As noted previously, we are further open to collaborating in all aspects of program development and implementation and look forward to these discussions.

G. Adequacy of Curriculum Design, Program Modality, and Related Learning Outcomes:

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

The proposed DSW program reflects the goals of the UMB campus, the interests of our alumni, the needs of the State of Maryland, and the expertise of the school's talented faculty. UMB's SSW has educated the vast majority of licensed social workers in the state since 1961. Our expertise in clinical training positions us as a national leader in educating and training social work practitioners at the highest level. Our clinical faculty has a wealth of experience that will create a comprehensive educational program and be a model for the State and Mid-Atlantic region.

Dr. Edward Pecukonis will serve as the inaugural director of the DSW program. He is responsible for all administrative activities related to recruitment, admission, and training of students and reports to the SSW Dean. Dr. Pecukonis has over 40 years of clinical experience on the UMB campus and is a full Professor at the SSW. Dr. Pecukonis is an expert in clinical treatment methods such as CBT, DBT, motivational Interviewing, and family therapy. Notably, Dr. Pecukonis has expertise in IPE and is a co-founder of UMB's Center for Interprofessional Education. He chaired the campus task force on IPE for former UMB President and now Chancellor of University System of Maryland, Dr. Perman, and is considered a leading expert on how to incorporate social work in team-based healthcare. IPE is a critical strength of our DSW, and intentionally incorporated into the proposed curriculum to promote effective communication with other professions and shared decision making while advocating for social justice and the well-being of our clients.

Along with other clinical faculty, Dr. Pecukonis will serve as the technical expert on course content and pedagogy. As part of the SSW planning process, Dr. Pecukonis has an advisory committee appointed by the Dean to provide curriculum guidance.

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

Program Objectives: Our proposed DSW program aims to:

- Assist students to integrate theory with practice methods to improve psychotherapy/social work services to individuals and families across all demographics and populations.
- Apply relevant Biopsychosocial and social work practice theories to client centered care and the process of change at the individual, family, and community level.
- Students will further develop use of self, self-appraisal, and use of self-reflection in clinical encounters to improve their ability to provide therapeutic services to diverse clients.
- Effectively assist their clients to explore and develop helpful and personalized solutions to their presenting problems.
- Assist students to develop expertise and competence in cognitive-behavioral therapy, Dialectical Behavioral therapy, motivational interviewing, interpersonal psychotherapy, EMDR and other modalities as outlined in our curriculum or of interest to the student.
- Prepare trainees to teach advance clinical social work curriculum to BSW and MSW students within a classroom setting including skills in curriculum development, effective classroom management strategies, case-based teaching methods, simulation and competency-based education strategies and assessments.
- Develop expertise in methods of individual, and group supervision, use of self and value of self-reflection in the therapeutic encounter and decision-making processes associated with psychotherapy that is rooted in evidence-based approaches and ethical principles of the social work profession.
- Students will develop skills in both quantitative and qualitative research and be able to apply these skills to the clinical setting and program management to both develop and assess community-based treatment programs and interventions.
- Students will identify and refine their leadership style and its impact on educational and clinical services to clients, students, and communities.
- Students will develop expertise and demonstrate competence in promoting social justice, health equity, embracing diversity and inclusion of all people across all social environments.
- Students will learn to use these principles in clinical, teaching, and administrative work.
- Engage students in articulating what is anti-racist, anti-oppressive, clinical education and practice in the various contexts and settings in which they work and demonstrate competence in confronting and dismantling these threats.

Student Learning Outcomes: At the end of the program, students will:

- Apply social work leadership and management skills to enhance their agency practice environments through a defined class project.

- Demonstrate leadership ability through thoughtful and respectful communication with other health care professionals that promotes effective, ethical, and safe, client centered care within their agency.
- Use leadership skills, effective communication collaboration and reduced profession centrism across interprofessional environments with diverse clients and health care providers.
- Describe biological basis of human behavior and the epigenetic interaction between endogenous and exogenous factors influencing a person's mental health.
- Use qualitative and quantitative research methods to develop a systematic inquiry of an advanced area of social work clinical practice through their capstone project.
- Apply social work research methodologies to evaluate clinical practice and use these findings to select and employ evidence-based interventions within their specific agency practice setting.
- Critically evaluate advanced-level evidence-based practices theories and their application to their specific agency-based client population they presently serve.
- Analyze complex information about social work evidence, practice skills, and interventions clearly and creatively for professional and academic audiences in written and oral formats.
- Demonstrate knowledge and understanding of the dynamic and evolving biopsychosocial sciences and the application of this knowledge to patient/client care.
- Identify, evaluate, and implement innovative and cutting-edge methods of psychotherapy and treatment to address complex social and behavioral health conditions.
- Engage clients, accurately identify presenting complaints, identify their stage of change, assess the impact of biopsychosocial factors contributing to the presenting complaint, collaboratively develop an effective intervention plan based on valid theory and/or behavioral health technology and create a plan to reduce relapse.
- Demonstrate clinical competence in mastering one form of empirically valid psychotherapy through simulation and use of standardized clients.
- Exercise an ability to promote social justice and advocate for health equity within their clinical simulations, classroom behavior with peers and within their home agency and work with their supervisees.
- Facilitate effective engagement and supervision of social workers and social work students.
- Teach the use of self-reflection and appraisal during supervision to improve client outcomes and achieve treatment goals.
- Illustrate teaching competence by designing a clinical social work course that includes a syllabus, learning objectives, readings, classroom activities, homework assignments, assessment tools.
- Demonstrate clinical teaching skills by designing and teaching a seminar series or clinical course at the SSW.

3. Explain how the institution will:

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

Student learning outcomes for all dimensions of the DSW curriculum will be operationalized and assessed using exams, observational rubrics, and other objective measures. The overall goal of this

assessment process is to make certain that our curriculum is preparing students for the workforce. Student learning will be assessed by each course instructor at prescribed intervals during a 15-week semester. The DSW faculty will evaluate course outcomes and student performance. In this manner, the attainment of goals and objectives for each course will be evaluated. Each student learning outcome will reflect the goals and objectives of the curriculum. In addition, all outcomes will be operationalized and measured objectively with a focus on skills and clinical competencies.

b) Document student achievement of learning outcomes in the program

Whenever possible student learning outcomes will be competency-based. The Council on Social Work Education emphasizes the importance of evidence-based practice (CSWE, 2016). Most Social Work students are introduced to evidence-based practice (EBP) models in the classroom. They are assigned readings, listen to lectures, and may become quite knowledgeable about an intervention method. However, knowledge is not equated with clinical competence, and it is rare that a student becomes an excellent clinician by only reading a textbook or listening to a lecture. In any vocation or skilled profession, a student develops competence and master's approach by practicing the skill under the careful eye of a mentor. Extensive experiential/practice opportunities within the classroom for students will be used. We will employ a teaching model that combines the best of classroom learning (acquisition of knowledge) with the best of field (experiential or hands on learning). To accomplish this goal we will employ simulation, live supervision, and debriefing with standardized patients for both skill acquisition and skill competency assessment.

A Standardized Patient (SP), or Standardized client (SC) as they are known in Social Work, is a skilled actor that is recruited and carefully trained to simulate a clinical encounter. The actor is provided with a script or set of behaviors, attitudes, and emotions to portray during the clinical encounter. The actor prepares their presentation uniformly and responds consistently across interviews and thus standardizes the format for teaching and evaluating learning. This standardized presentation assists trainees to either practice a clinical skill or be evaluated on their mastery of this skill. Our standardized clients will be scripted to portray a predetermined history and to give responses within the clinical interview that simulates a "real client." This method will allow the DSW students to ethically interview the same client sequentially with minimal deviation in the client's presentation and reaction across trainee interviews. This standardization will allow us to grade or evaluate how well a DSW student has mastered the course content. We will use standardized clients to teach trainees in a developmental manner and to assess proficiency/ competency/ mastery of a particular clinical skill following a training sequence or course.

Simulation and Debriefing*:* Consolidation of clinical learning derived from simulated encounters with standardized clients is best accomplished by "debriefing." Paliganas and colleagues (2016), suggest that debriefing is the most critical dimension of simulation. It allows not only for feedback about what happened during the interview but also encourages trainees to reflect on internal experiences including perceptions, thoughts and emotions encountered during the interview. These factors help consolidate learning. In addition, the trainee receives direct feedback from the instructor, peers, and the simulated client.

Live Supervision: A key feature to our curriculum model incorporates live supervision where the instructor watches and provides guidance to DSW students interviewing a standardized client

during a simulated interview. The instructor/supervisor watches through a one-way mirror or via visual aid (TV camera positioned in the interview room) with the ability to communicate with the trainee via earpiece and microphone. The student in turn utilizes this live supervision to develop and refine specific skills being taught. Live supervision is valued for its ability to provide immediate feedback, increase self-awareness, and improve clinical skills. When possible and appropriate to the course structure, live supervision with standardized clients in a simulation format will be used to teach skills and assess student learning.

Developing clinical simulations: Theories of adult learning will guide the construction, application and evaluation of clinical simulation and the use of standardized clients (Palaganas et al., 2016). The process of creating valid and instructive simulation cases is not only time consuming but critical to the live supervision process and assessing student learning. The simulation case must be believable, detailed, and of interest to the trainees. Case histories used by the actors include descriptions of symptoms, clinical presentation, mood, body language, and motivation for each simulation. Written objectives for the simulation are developed and shared with the standardized actor. The goal is to anchor the standardized client's presentation and reactions during the simulation to these learning objectives. Thus, actors or simulated clients must be oriented to the training process and be prepared to portray the client in a believable manner. Training of standardized clients occurs prior to each simulation that includes a detailed case discussion, along with outlining the objectives of the training and how the client might react to a wide range of trainee responses. The standardized client(s) then practice these portrayals prior to meeting with trainees.

Qualifying exam: A student will achieve Candidacy after passing a comprehensive examination offered after completing Year 1 and 2 of classroom academic requirements with a GPA of 3.0. or better. This examination may require both a written exam, demonstration of clinical skills via simulation, and/or oral examination by the DSW faculty. This comprehensive examination will be scheduled during the summer months between Year 2 and 3. All written examinations will be read by two DSW faculty who will grade the exam as meeting requirements (pass) or not meeting requirements (fail). Students who do not pass this examination will not be enrolled for their third and final year of training until a passing grade is obtained for the comprehensive exam. Students who initially fail this exam will have one additional opportunity to meet this requirement prior to dismissal from the program. After achieving candidacy, the student's primary task will be to complete, present, and defend their capstone project. It is expected that students will have met all requirements for graduation by the completion of the spring semester of their third year of matriculation.

Capstone Project: Throughout their matriculation, students will work on an original and comprehensive Capstone Project which integrates the knowledge and skills they have developed, strengthened, and refined throughout the course of the program. This project should position students as collaborative leaders, contributing new ideas, frameworks, or services to their area of focus in the realms of clinical education, leadership, and/or practice. Students will work on their Capstone Project supported by a team of at least two advisors: one of whom will be faculty affiliated with the SSW, and another who is deeply engrained in the community connected to each student's area of focus.

There are three options for the format of Capstone Projects that students may choose:

1. The creation of an interactive web-based training that disseminates innovative clinical knowledge and learning opportunities in their area of focus.
2. First-authorship of a scholarly paper published (or publishable) in an academic journal that contributes new clinical discourse in their area of focus.
3. Development and (initial) implementation of a new program designed to address unmet needs within their area of focus and that contributes to individual or community healing, wellbeing, or access to knowledge in the clinical realm.

Each student, in consultation with their faculty and community advisors, will seek approval for their Capstone Project from the DSW Director. Students will submit a brief overview of the project that includes: an outline of the proposed project, an explanation of the needs addressed by the project, its alignment with social work values and principles, potential impact and significance, and benchmarks of success that can be used for evaluation of the project at the culmination of the DSW program. As part of the Capstone Project each student will present their project and its impact within a colloquium. Presentations will focus on the collection of work they've undertaken during their time in the DSW program including how they have incorporated a Justice, Equity, Diversity, and Inclusion (JEDI) lens in their work, sharing and disseminating accomplishments and learning derived from their Capstone Project; and sharing their plans as they move this work forward. Additionally, the Capstone Project will promote an exercise in self-reflection where students are challenged to dig deep and explore any feelings of discomfort that arise surrounding challenging concepts. Students should challenge themselves by asking: What will it cost to change? What will it cost to stay the same? What does it mean to have courage in this context, and how will this enrich the journey to become a better social work clinician?

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

The DSW will require the completion of 60 credit hours that can be completed over a three-year period. The components of the proposed curriculum are as follows:

> ***Advanced Clinical Practice Theory and Methods Series***
> SWCL 800: Advance Clinical Practice Theory: Historical Perspectives and Current Contexts
> SWCL 801: Neuro-biological Basis of Human Behavior
> SWCL 803: Psychopharmacology and Complimentary Therapeutics
> SWCL 804: Foundational Clinical Practice Models
> SWCL 809: Innovations in Clinical Practice
> SWCL 812: Integrating Clinical Practice Models
> SWCL 818: Integration Seminar and Case Presentation
> SWCL 821: Simulation and Case Consultation Lab
>
> ***Teaching Pedagogy Series***
> SWCL 813: Social Work Teaching and Training Pedagogy: Theory and Practice
> SWCL 817: Social Work Course and Curriculum Design Lab

Leadership Development Series
SWCL 811: Leadership Styles in Social Work Practice Lab

Supervision Methods Series
SWCL 805:   Supervision and Mentorship
SWCL 810: Supervision and Mentorship Lab

Justice Equity, Diversity, and Inclusion Series
SWCL 806: Equity, Diversity and Inclusion in Social Work

Research Methods Series
SWCL 802: Philosophy of Science in Social Work
SWCL 807: Publication and Grant Writing Lab
SWCL 814: Research Methods/Qualitative Approaches
SWCL 819: Research Methods/Quantitative Approaches

Innovation and Impact (Capstone) Project Series
SWCL 815: Capstone Development Lab
SWCL 816: Capstone Project Seminar
SWCL 820: Capstone Project Seminar

The curriculum consists of six major curriculum areas, along with a capstone project. Each series includes at least one laboratory or "lab" course. Our lab courses are designed as practical, experiential seminars where students can focus deeply on the application of their learning in a setting that emphasizes hands on learning, community engagement, and/or novel content development as part of a community of learning.

Candidacy Requirements: A student will achieve Candidacy after successfully passing a comprehensive competence simulation/examination that is offered after the completion of the first two years of classroom learning with a GPA of 3.0. or better. This examination may require both a written exam, demonstration of clinical skills via simulation and/or oral examination by the DSW faculty. This comprehensive examination will be scheduled during the summer months between Year 2 and 3. All written examinations will be read by two DSW faculty who will grade the exam as meeting requirements (pass) or not meeting requirements (fail). Students who do not pass this examination will not be enrolled for their third and final year of training until a passing grade is obtained for the comprehensive exam. Students who initially fail this exam will have one additional opportunity to meet this requirement prior to dismissal from the program. After achieving candidacy, the student's primary task will be to complete, present, and defend their capstone project. It is expected that students will have met all requirements for graduation by the completion of the spring semester of their third year of matriculation.

Capstone Project: Throughout their matriculation, students will work on an original and comprehensive Capstone Project theme which integrates the knowledge and skills they have developed, strengthened, and refined throughout the course of the program. This project should position students as collaborative leaders, contributing new ideas, frameworks, or services to their area of focus in the realms of clinical education, supervision, and/or practice. Students will work on

their capstone supported by a team of at least two advisors: one of whom will be faculty affiliated with the SSW, and another who works within a community consistent with each student's area of focus.

There are three options for the format of Capstone Projects that students may choose:

1. The creation of an interactive web-based training that disseminates innovative clinical knowledge and learning opportunities in their area of focus.
2. First-authorship of a scholarly paper published (or publishable) in an academic journal that contributes new clinical discourse in their area of focus.
3. Development and (initial) implementation of a new program designed to address unmet needs within their area of focus and contribute to individual or community healing, wellbeing, or access to knowledge in the clinical realm.

Each student, in consultation with their faculty and community advisors, will seek approval for their Capstone Project from the DSW Director. Students will submit a brief overview of the project that includes: an outline of the proposed project, an explanation of the needs addressed by the project, its alignment with social work values and principles, potential impact and significance and benchmarks of success that can be used for evaluation of the project at the culmination of the DSW program. As part of the Capstone each student will present their project and its impact within a colloquium. Presentations will focus on the collection of work they've undertaken during their time in the DSW program including how they have incorporated a Justice, Equity, Diversity, and Inclusion (JEDI) lens in their work, sharing and disseminating accomplishments and learning derived from their Capstone Project; and sharing their future plans as they move this work forward. Additionally, the capstone project will promote an exercise in self-reflection where students are challenged to dig deep and explore any feelings of discomfort that arise surrounding challenging concepts. Students should challenge themselves by asking: What will it cost to change? What will it cost to stay the same? What does it mean to have courage in this context, and how will this enrich the journey to become a better social work clinician?

Typical Plan of Study DSW Year 1 through Year 3

The DSW program is full-time with all courses taught in-person and for one weekend (Friday, Saturday, and Sunday) per month spanning each fall and spring semester for a total of 10 months. Students will also participate in three weeklong summer intensive two (2) credit courses occurring prior to each fall semester. All full-time students will complete three (3) courses per semester for a total of nine (9) credits. Students will complete a total of 20 credits each year of the program that includes the two-credit weeklong summer intensive requirements. As this is a cohort program, students will complete the following course work in sequence with their assigned/admitted cohort. This structure will help to create a powerful learning community for students. Course numbers are for demonstration purposes only and may need to reflect registrar's preferred structure upon approval of the DSW program.

SCHOOL OF SOCIAL WORK | DOCTOR OF SOCIAL WORK (DSW)
COURSE DESCRIPTIONS

DSW - Three Year Plan of Study		
Year 1: Weeklong intensive summer seminar series (2 credits)*SWCL 806: Justice, Equity, Diversity and Inclusion*		
Year 1: Fall Semester		
Course number	**Course Name**	**Credits**
SWCL 801	Neuro-Biological Basis of Human Behavior	3 credits
SWCL 800	Advanced Clinical Practice Theory: Historical Perspectives and Current Contexts	3 credits
SWCL 802	Philosophy of Science in Social Work	3 credits
Year 1: Spring Semester		
Course Number	**Course Name**	**Credits**
SWCL 803	Psychopharmacology and Complimentary Therapeutics	3 credits
SWCL 804	Adapting Foundational Models for Clinical Practice	3 credits
SWCL 805	Supervision and Mentorship	3 credits
Year 2: Weeklong intensive summer seminar series (2 credits) SWCL 807: *Publication and Grant Writing Lab*		
Year 2: Fall Semester		
Course number	**Course Name**	**Credits**
SWCL 809	Innovations in Clinical Practice	3 credits
SWCL 810	Supervision and Mentorship Lab	3 credits
SWCL 814	Research Methods: Quantitative Approaches in Clinical Social Work Practice Settings	3 credits
Year 2: Spring Semester		
Course Number	**Course Name**	**Credits**
SWCL 812	Integrative Practice	3 credits
SWCL 813	Social Work Teaching and Training: Pedagogical Theory and Practice	3 credits
SWCL 819	Research Methods: Qualitative Approaches in Clinical Social Work Practice Settings	3 credits
Year 3: Weeklong intensive summer seminar series (2 credits) SWCL 815: *Capstone Project development*		
Year 3: Fall Semester		
Course number	**Course Name**	**Credits**
SWCL 818	Integration Seminar/ Case Presentation	3 credits
SWCL 817	Course and Curriculum Design Lab	3 credits
SWCL 816	Capstone Project Seminar	3 credits
Year 3: Spring Semester		
Course Number	**Course Name**	**Credits**
SWCL 811	Leadership and Mentoring Lab	3 credits
SWCL 821	Simulation and Case Consultation Lab	3 credits
SWCL 820	Capstone Project Seminar	3 credits

Advanced Clinical Practice Theory and Methods Series

- **SWCL 800: Advanced Clinical Theory: Historical Perspectives and Current Contexts (3 credits)**
  This course will examine personality development in terms of behavior, emotions, and cognitions and how these interrelated constructs influence present adaptations and the process of change for clients. Students will explore the underlying values, assumptions, methods, and research evidence for each practice theory. The focus of this class will be on theories that were prominent during the early and mid-twentieth century, through selections of original contributions from id or drive psychology, attachment, ego psychology, object relations, self-psychology, family systems, behavioral, narrative, cognitive/behavioral therapy, NMT and interpersonal neurobiology. Drawing primarily from original sources, students will consider key assumptions, constructs, and propositions of each theory in terms of its congruence with social work's principles, values, and mission, as well as its application and relevance to the identities and experiences of the communities and contexts of which each student is a part.

- **SWCL 801: Neuro-Biological Basis of Human Behavior (3 credits)**
  This course will provide an overview of the neurobiology shaping behaviors that inform clinical social work practice. Students will explore the impact of genetics, neuroanatomy and physiology in the etiology of emotional disorders and behavior. The course will review basic neuroanatomy, behavior physiology, and neurodevelopment. The course explores the mind and body connection in moderating a person's mental health and psychological wellbeing. Special attention will be given to the Neurosequential Model of Therapeutics and trauma theory including the NMT metrics of sensory integration, self-regulation, relational function, and cognition. This course will be co-taught by interprofessional faculty.

- **SWCL 803: Psychopharmacology and Complimentary Therapeutics (3 credits)**
  This basic course in psychopharmacology will be co-taught by faculty from the Schools of Social Work and Pharmacy. Students will be introduced to the basics of pharmacotherapy addressing the more common DSM-5 diagnoses. Key medications with their clinical indications, symptom management, and dosage will be addressed. Students will be introduced to commonly used medications to treat mood disorders, anxiety, PTSD, personality disorders and schizophrenia. The course will emphasize the mechanism, action, contraindications, interactions with other medications and side effects of each class of medications. This course will require the completion of SWCL 801 as a prerequisite. The sociocultural context relevant to psychopharmacological interventions including access, demographic disparities, cultural beliefs about medication, and their use as a complement to psychotherapeutic interventions will also be discussed. *This course will require the completion of SWCL 801 as a prerequisite.*

The Advanced Clinical Methods Series will build on the earlier curriculum content that explores JEDI as a grounding framework for practice, focusing on concrete skills for working alongside individuals and communities in a clinical context. The first two courses in this series will provide an opportunity for students to explore in-depth a framework or clinical modality of interest to them, and apply it to their own area of focus, with an emphasis on understanding the context in which the model developed, the core skills and interventions associated with it, and the ways in which those skills translate to their practice area. The final course in the series will build on that knowledge and

support students in exploring and applying clinical interventions in an integrative, culturally responsive framework that is specifically adapted to meet the unique needs of the communities in which they work. Throughout each of these courses, students will analyze the pros and cons of each clinical modality, including discussion of the ways in which multiple forms of oppression manifest in therapy and clinical practice. Students will learn how to embrace an antiracism approach to reach level of competency that promotes safety and prevents harm coming to those they desire to help, exploring the ways in which they can be an active force in improving clinical frameworks and modalities to be more anti-racist, anti-oppressive and inclusive.

- **SWCL 804: Adapting Foundational Models for Practice (3 credits)**
  In this seminar-style course, students will explore in depth the three major psychotherapeutic frameworks that have historically guided clinical work in the United States: psychoanalysis/ psychodynamic/ relational, behavioral, and cognitive models. Students will examine the origins of these modalities, including the experiences of the creators and the sociopolitical context in which these techniques emerged, and the core therapeutic skills and interventions associated with their implementation will be demonstrated and practiced. Students will also explore the ways in which these modalities have either hindered or cultivated justice, equity, diversity and inclusion and learn how to recognize and embrace an ARAO approach in clinical practice. While these modalities have been utilized for quite some time, students will explore innovative platforms through which they are or could be delivered (for example using telehealth platforms, web or phone-based applications, and other mechanisms that might expand access to behavioral health services). Individually or in collaborative teams, students will choose a specific framework connected to one of these three streams of psychotherapy, concentrating on its application within their own area of focus or population of interest. Application should explore any needed adaptations and/or innovations to better meet the needs of the population or communities with which they work. Each student will create and present a case conceptualization, a simulated demonstration video implementing the skills associated with their chosen modality and identify questions or topics for consultation and discussion amongst course participants.

- **SWCL 809: Innovations in Clinical Practice (3 credits)**
  In this seminar-style course students will use the same framework of exploration, inquiry, and application/simulation to engage with a variety of clinical modalities that have developed as part of a "third wave" or move toward more integrative practice models that attempt to center concepts like meaning making, trauma-informed care, individual and collective narratives, cultural humility, critical consciousness, mindfulness, relationship skills, the brain-body connection, and/or values-centered action. This includes models such as Narrative Therapy, Dialectical Behavior Therapy, Motivational Interviewing, Acceptance and Commitment Therapy, Schema Therapy, Eye Movement Desensitization and Reprocessing Therapy, Internal Family Systems Therapy, Healing Circles, and culturally rooted/indigenous therapeutic practices. Individually or in collaborative teams, students will choose a modality in which they would like to develop deeper knowledge and skill, concentrating on its application within their own area of focus or population of interest. Application should explore any needed adaptations and/or innovations to better meet the needs of the population or communities with which they work. Specifically, students will be challenged to explore how such adaptations and/or innovation can cultivate antiracism, justice, equity and inclusion. Each student will create and

present a case conceptualization; a simulated demonstration video implementing the skills associated with their chosen modality and identify questions or discussion topics for consultation and discussion amongst course participants.

- **SWCL 812: Integrative Practice (3 credits)**
  Traditionally, clinical education has focused on the provision of therapeutic services through specific frameworks or modalities. However, in practice most clinicians develop their own style of integrating clinical tools, philosophies, and interventions to fit the unique and diverse needs of the individuals and communities with whom they work (Zarbo et al., 2016). Openness to integrative, flexible, culturally responsive practice is in line with efforts to decenter more rigid western-colonial perspectives and meet the unique needs of each person or community in their specific context. This course will explore different frameworks for integrative practice and give students the opportunity to consider and articulate what aspects of different traditions, tools, and evidence-supported frameworks might be most helpful in their own area of focus or population of interest. As part of this course, students will research different aspects of effective practice within their specific area of focus including multiple forms of evidence: scholarly research, clinical trainings, and community voices, feedback, and narratives. Each student will develop a training guide, demonstration video, or scholarly paper focused on the application and adaptation of clinical modalities within the sociocultural context of the communities or populations they work alongside, with an emphasis on integrative person or community-centered practice.

- **SWCL 818: Integration Seminar and Case Presentation (3 credits)**
  This course will engage students in progressively higher-level critical thinking and clinical decision making using a case-based approach along with simulation. This seminar will allow students to integrate their DSW academic course work with clinical experiences from their employment sites and work with their own clients. These seminars will emphasize not only the application of theory to clinical encounters, but also enhance the process of self-reflection, self-awareness, use of self and application of ethical principles including anti-racism and anti-oppression principles within their practice. Students will present and discuss client cases, their diagnoses, theoretical conceptualization of the presenting problems, treatment planning and specific interventions used. The group will provide feedback and assist in formulating effective interventions. Students will learn methods of effective consultation both in-person and using telehealth care devices. Students will learn the process of effectively triaging clients for services, identifying potential risks (health/behavioral health) develop skills in safeguarding risk, promoting safety plans and appropriate documentation of each case. Simulation and role play of client encounters will be used.

- **SWCL 821: Simulation and Case Consultation Lab (3 credits)**
  Clinical Social Work practice involves not only working with individuals and families but also working alongside other professionals (working interprofessionaly) in the care of your clients. Effective interprofessional collaboration, teamwork and communication is necessary. This course will discuss how to conduct short term consultative services, telehealth services, provide written and verbal feedback of assessments, and how to craft helpful recommendations for colleagues in support of clients' well-being.

Teaching Pedagogy Series

- **SWCL 813: Social Work Teaching and Training: Pedagogical Theory and Practice (3 credits)**
  The aim of this course is to provide students with the basic foundation and advanced knowledge of the theory and practice of social work teaching. The course focuses on the theoretical and technical aspects of delivering social work education. The main focus of the course is to create, to the extent possible, the simulation of real-world teaching situations designed to help students develop their *teaching practice* through a process of critical reflection, integration, and application. The development of teaching skills is a critical focus of the course. The course covers social work teaching at both the BSW and MSW levels. The course includes theories of **andragogy** and reflective practice, curriculum development, teaching methodologies and techniques, general classroom activity, assessment and evaluation of students, testing methodology, ethical considerations, and professional academic development at BSW and MSW levels of social work education. Readings are drawn from social work education literature as well as from interprofessional perspectives, including teaching and learning in higher education.

- **SWCL 817: Course and Curriculum Design Lab (3 credits)**
  This second teaching course will be a practicum experience for DSW students. Students will be assigned to create and implement a social work training seminar or course at their employment site or through the SSW. For example, Students may guest lecture in an appropriate SW course and provide at least one three-hour lecture on a topic reflecting their clinical specialty of interest. Lectures will be designed and discussed within the classroom format and will be implemented during the semester. Each student teaching activity will be observed by the instructor or videotaped for review along with detailed feedback of their teaching session. This course will be focused on the application and practice of teaching social workers and the activities this entails.

Leadership Development Series

- **SWCL 811: Leadership Lab (3 credits)**
  This course is designed to assist students in developing a personal philosophy and approach to leadership. The course will introduce historical and current theories on leadership, reflect on the various contexts in which leadership skills are exercised and consider leadership practices in multicultural environments. While there are many models of leadership development and practice, there is growing concern that we are amid a leadership crisis: the need and intensity for health and human services is increasing while leadership talent is declining. The health and performance of the human services sector depends upon equitably equipping potential, emerging, and current leaders with relevant, meaningful, and impactful leadership skills. This course will align and interconnect leadership theory and development with leadership practice in the real world at the individual, relational and collective, and organizational levels.

Supervision Methods Series

- **SWCL 805: Supervision and Mentoring (3 credits)**
  This course will explore the principles, structures and practice of supervision, consultation, and

mentoring in Clinical Social Work across the continuum of professional development. Students will explore a variety of supervisory approaches and the theoretical concepts underlying these approaches while learning how to integrate these styles in their work with students and supervisees. Models of individual and small group supervision will be demonstrated, practiced and discussed in detail. Issues of how to teach and mentor supervisees within a community setting will be discussed. Simulation of clinical supervision with standardized clients across academic and community settings will be employed by students as they discover their preferred approaches to supervision. Students will use exercises on self-awareness, reflective supervision, and learn to employ JEDI principles introduced in the introductory intensive weeklong course on the same topic.

- **SWCL 810: Supervision Mentoring Lab (3 credits)**
  This second supervision course will be a practicum experience for DSW students. Students will be assigned to supervise a group of social work students working within their field placement. A second option will be for DSW students to use their employment environment to employ their supervision strategies. The goal is for students to apply their learning with actual social work trainees/workers, present these experiences to the group, obtain feedback to improve this supervisory experience. At least one supervision session will be videotaped for discussion and evaluation.

Justice Equity, Diversity, and Inclusion Series

- **SWCL 806: Equity, Diversity and Inclusion (2 credits)**
  In this weeklong intensive course, students will experientially engage with values, principles, concepts, and frameworks that facilitate justice-oriented, equitable, inclusive practice which recognizes the diversity in experiences and identities among the individuals and communities we work alongside. This will include a deep analysis of the impact of ideologies that sustain racism and other forms of oppression, how these *isms* manifest and endure, and how they impact individuals living within systems of power and privilege across micro and macro levels. Students will be introduced to the Social Change Ecosystem (Iyer, 2017), utilizing this framework to analyze the ways in which they can organize for lasting social change within their own sphere of practice in an effort to create a more equitable and just society. They will also engage with anti-racist anti-oppressive (ARAO) lenses, intersectionality, and Restorative Practices as approaches to clinical work in line with JEDI values. This will include examination of the clinical discourse on both conscious and unconscious bias, self-awareness, awareness of privilege, identity formation, the role of advocacy and a justice orientation in clinical work, and affirming, culturally responsive practice. At the culmination of the course, students will develop an ARAO vision for their practice, creating a plan, statement, or vision board, articulating their own JEDI-oriented values and goals that will serve as an anchor and guide throughout the DSW program.

Research Methods Series

- **SWCL 802: Philosophy of Science in Social Work (3 credits)**
  This course examines the assumptions, history, and development of scientific methods within social work. The course will cover methods of scientific inquiry and how knowledge is

accumulated and validated. Students will explore how theory is constructed and its importance in explaining and predicting behavior. The course provides an in-depth exploration of ontological and epistemological foundations within social work and behavioral sciences. Discussion of theory development and construction along with methodological approaches to testing theory will be explored. Students will discuss important controversies within the field of philosophy of science, the role of values in research and methodological strategies along with the limitations of measurements used in the social sciences. The course will identify and evaluate the building blocks of social science - definitions and concept-formation, descriptive strategies, traditions of interpretation, measurement of variables, strategies of inference, ethics and Forms of explanation of findings.

- **SWCL 807: Summer Weeklong Intensive Seminar Series Year 2: Publication and Grant Writing Lab (2 credits)**
  This weeklong workshop will provide students with the necessary information to outline and write a publishable paper, including the selection of a topic, target audience, and appropriate journal. Students will develop skills in organizing content and preparing for the review process. Emphasis will be placed on the development of a literature review for publication in one's area of expertise/interest. Each student will be required to start or complete a paper that expands on work done for a practice course or that reflects their interest and supports the student's clinical practice and/or Capstone project (e.g., a traditional case study or a single system design study).

- **SWCL 814: Research Methods: Quantitative Approaches in Clinical Social Work Practice Settings (3 credits)**
  The purpose of this course is to cover the essential concepts of quantitative research methods. This course will focus on research ethics, building a conceptual framework, question and hypothesis formulation, research design, sampling, level of measurement for variables and scale construction. Students will learn how to design research related to social work practice. The course will review the selection and development of outcome measures, intervention manuals, and fidelity measures as appropriate. It will closely examine the use and development of practice guidelines, evidence-based practice, and meta-analytic procedures. Each student will identify a substantive research area related to clinical practice and logical steps toward formulating key research questions. Aspects of conducting literature reviews leading to the articulation of a substantive research area will be taught.

- **SWCL 819: Research Methods: Qualitative Approaches in Clinical Social Work Practice Settings (3 credits)**
  This course will provide an overview of six types of qualitative research approaches widely used in social work inquiry: 1) content analysis, 2) template analyses, 3) grounded theory, 4) participatory action research, 5) Indigenous and decolonizing methods and 6) immersion approaches. These methods illustrate key differences in research purposes, epistemologies, ethics, and methods. In general, the course will provide an exploration of foundational qualitative research methods and strategies. Students will be introduced to ontological, epistemological structures and theoretical assumptions underlying these methods. Students will learn how appropriately apply these methods with particular emphasis on use within the

clinical setting. Students will learn how to both acknowledge and document the lived experience of participants.

Capstone Project Series:

- **SWCL 815: Summer Weeklong Intensive Seminar Series Year 3: Capstone Development Lab. (2 credits)**
  This course is focused on developing an idea for their final capstone project. This pro-seminar will encourage students to discuss, research and present their proposals for the capstone project. The instructor will provide instruction and consultation to each student around their area of interest and assist them to formulate a project that is clearly defined and doable within the period allocated. By the end of this seminar, students are expected to have a solid draft of their proposal.

- **SWCL 816: Capstone Project Seminar (3 credits)**
  This second seminar will be dedicated to the refinement and submission of their capstone proposal and the initiation of their proposed project including clear documentation of goals and objectives, procedures and methods, expected outcomes, and timeline for completing the project. Each proposal will be presented to the class who will provide feedback and suggestions.

- **SWCL 820: Capstone Project Seminar (3 credits)**
  This seminar is the culmination of the capstone project and a student's last step before being certified for graduation. The first half of the class will be dedicated to assisting students to complete and write up their capstone project. The second half of the class each student will make a formal presentation of their project along with comments about their struggles, learning, and future directions of this interest. These presentations along with the student's defense of their findings and/or accomplishments will be graded (pass/fail)

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

There are no general educational requirements necessary for this doctorate degree. All courses are at the graduate level and assume all general educational requirements have been met and are reflected in their undergraduate transcripts.

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

The Council on Social Work Education (CSWE) is the accrediting body for social work programs. Due to the relative newness of DSW programs, CSWE only recently (June 2020) drafted and is now actively piloting these guidelines. We have consulted with CSWE and incorporated these draft guidelines within our proposal. We will seek accreditation when CSWE formally adopts accreditation standards and establishes an accreditation process for DSW programs. Our program of study is in line with the proposed national guidelines.

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

This is not applicable to the present degree 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.

The SSW maintains up-to-date information of its degree programs on its' website (https://www.ssw.umaryland.edu). Once approved, the DSW curriculum will be made available on the SSW web page. As with other educational programs, we will list information on the DSW curriculum, course descriptions, degree requirements, and cost of education. The website also has links to information about the learning management system, support services, and financial aid. We affirm that the same information will be available for prospective and existing students in the proposed DSW in social work.

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 SSW affirms that all advertising, recruiting and admissions materials will accurately represent the DSW in Clinical Social Work.

H. Adequacy of Articulation

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

There are no articulation agreements related to this program.

I. Adequacy of Faculty Resources

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 faculty member will teach in the proposed program.

The following full-time and adjunct faculty are eligible to teach in our proposed DSW curriculum. In addition, the weekend structure of the DSW program will not compete with instructional support with the MSW program and allow us to contract with national experts to provide instruction for our doctoral students as appropriate. This table documents the vast amount of clinical and teaching experience our world class faculty possess. The list of courses next to a faculty member's name indicates their qualification to teach this content.

Faculty member	Title and Appointment	Status	Terminal Degree	Field of Study	Courses Qualified to teach (by course number)
Edward Pecukonis	Professor and DSW Director	Full time Tenured	Ph.D.	Social Work	SWCL: 804, 807, 809, 812, 815, 820, 816, 821, 818
Samantha Fuld	Assistant Professor	Full time Non- Tenured	DSW	Social Work	SWCL: 800, 809, 812, 806, 815, 820, 816, 818
Geoff Grief	Professor	Full time Tenured	Ph.D.	Social Work	SWCL: 813, 817, 815, 820, 816, 818
Bruce DeForge	Associate Professor	Full time Tenured	Ph.D.	Sociology	SWCL: 807, 814, 819, 802
Karen Hopkins	Professor	Full time Tenured	Ph.D.	Social Work	SWCL: 811
Megan Meyers	Associate Professor	Full time Tenured	Ph.D.	Social Work	SWCL: 811
Paul Sacco	Associate Professor	Full time Tenured	Ph.D.	Social Work	SWCL: 814, 819
Joan Pittman	Clinical Associate Professor	Full time Non- Tenured	Ph.D.	Social Work	SWCL: 805, 810, 815, 820, 816
Neijma Celestine-Donnor	Associate Dean for DEI and Clinical Instructor	Full time Non- Tenured	JD	Social Work/ Law	SWCL: 806
Peter Smith	Clinical Instructor	Part Time Non- Tenured	Ph.D.	Social Work	SWCL: 804, 818
Jeff Singer	Adjunct III	Part time Adjunct	MSW	Social Work	SWCL: 802
Mellisa Edmondson-Smith	Associate Professor	Full time Tenured	Ph.D.	Social Work	SWCL:815, 820, 816, 818
Erika Lewis	Assistant Professor	Full time Tenure track	Ph.D.	Social Work	SWCL: 806, 804, 809, 812, 815, 820, 816, 821, 818

Faculty TB hired	Associate or Professor	Full time Non- Tenured	SWCL	Social Work	SWCL: 801
Faculty TB hired	Associate or Professor	Full time Non- Tenured	SWCL	Social Work	SWCL: 803

2. Demonstrate how the institution will provide ongoing pedagogy training for faculty in evidenced based best practices.

The SSW has a structured process for training teaching faculty and ensuring effective instruction occurs in the classroom that is responsive to student need and interest. Educational activities at this training level are competency-based and involve student/trainee involvement at all levels. The SSW will establish a curriculum committee for the DSW program consisting of fully elected faculty and staff along with two student representatives. This committee will provide guidance to the administration and input to course offerings and andragogy.

The SSW and the UMB campus use the Blackboard Learning Management System for both online and in-person courses. Blackboard is a comprehensive learning management system that houses all course content provides a platform for discussion and live collaboration and teaching via zoom, voice thread and blackboard collaborate. All lectures are posted on Blackboard via voice thread software and made available to students at their convenience.

Based on Quality Matters standards, UMB promotes use of a rubric which details the best practices for classroom and distance education; this rubric helps faculty, and instructional designers create the courses; assesses the readiness of the course and ensures that all courses are instructionally and pedagogically sound. The best practices are a synthesis of strategies coordinated by the SSW Idea team and reflect best practices for higher education that include:

- Course overview, introduction of course material to the students along with classroom management approaches
- Course organization and design using simulation and standardized clients
- Learning Objectives (competencies) that are clear, objective and measurable
- Instructional Materials including the selection of manualized approaches
- Learner Communication, Interaction and Collaboration
- Assessment and Evaluation (measurement) to assure student competence and readiness for practice
- Course Technology
- Learner Support offered by both the SSW and campus

J. Adequacy of Library Resources

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

University of Maryland Health Sciences and Human Services Library (HSHSL)
The University of Maryland Health Sciences and Human Services Library (HSHSL) serves as a hub for collaboration and learning on the UMB campus and is one of the largest health sciences libraries in the United States both physically and by collection size. Opened in 1998, the HSHSL building is fully equipped with Wi-Fi and has seating for over 900 users including 41 group study rooms, three computer classrooms, an Innovation Space that includes 3D printers, a presentation and production studio, art gallery, and technology-enhanced meeting and collaboration spaces. The HSHSL website (www.hshsl.umaryland.edu) provides access to a range of resources and services.

The library provides access to 108 databases, 4,737 e-journals, 17,669 e-books, and maintains a collection of 144,416 print books and 7,586 archival print journals. Through the library's interlibrary loan and document delivery services, faculty, staff, and students may acquire articles and other resources not available through the library's collections. The HSHSL also provides access to the UMB Digital Archive, an open access university repository hosting university created research including white papers, research posters, and more.

The HSHSL has a track record of innovative and user-centered services. With a team of 26 faculty librarians and 28 library staff, the HSHSL serves UMB's 6,900 students and over 8,000 faculty and staff members in the schools of dentistry, medicine, nursing, pharmacy, social work, and graduate studies. The library also provides access and services to the University of Maryland Medical Center (UMMC) and other affiliated institutions. The library's suite of research services is available for all programs on campus, and includes research and publication strategy consultations, systematic review and expert literature searching services, research impact assessment, public access policy compliance review, and other research services as requested. The library's Center for Data and Bioinformation Services offers consultations and workshops on data access, management, and sharing, as well as support for bioinformatics research, including information on high throughput sequence analysis, DNA, RNA, protein data resources, and research computing.

The HSHSL is home to the National Network of Libraries of Medicine (NNLM) Region 1, an outreach program of the National Library of Medicine, whose mission is to advance the progress of medicine and improve public health and access to health information. The HSHSL has held this competitive and prestigious grant funded designation for over 35 years. In 2021, the HSHSL was also selected to host the NNLM Network Web Services Office (NWSO), which develops and maintains web services for all seven NNLM Regions and other NNLM centers. Through its outreach programming the NNLM Region 1 and the HSHSL regularly reach over 3,000 community members and unaffiliated groups through free workshops, exhibits, and presentations on topics including health literacy, data management, and citizen science.

K. Adequacy of Physical Facilities, Infrastructure, and Instructional Equipment

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.

UMB, located on 65 acres in downtown Baltimore is comprised of six professional schools - Social Work, Medicine, Nursing, Dentistry, Pharmacy, Law, and an interdisciplinary Graduate School. In combination, the schools enroll approximately 6,667 students. Also located on campus is the

UMMC that provides physical and mental health services to city residents, particularly individuals who live in West Baltimore. The Health Sciences Library, completed in 2000, is a state-of-the-art regional medical library center with a fully computerized management information system and computerized information retrieval and distance education systems.

The SSW has grown to become one of the ten largest schools of social work in the country. Currently ranked 24 by *U.S. News & World Report* (2024), the SSW is part of a vibrant community and a thriving professional school campus. The SSW has been ranked as high as 5th in the nation in publication productivity (Ligon & Thyer, 2001). The MSW program has produced more than 350 graduates per year. In collaboration with other professional schools, the SSW offers dual-degree programs in Public Health, Law, Jewish Studies, and Business Administration.

UMB is currently designing **a new 127,000 square foot facility for the School of Social Work in downtown Baltimore**. The $121M project will consolidate all programs into one building and it will be the most sustainable building on the UMB campus incorporating biophilic design, photovoltaic panels, and a minimal carbon footprint. The building is comprised of over 14,000 square feet of classroom and instructional spaces, media labs, and simulation rooms. The building design includes a prayer space, a lactation room, various lounges, and informal learning spaces to support the school of social work community. Construction is anticipated to begin in December 2024, and the anticipated completion date is August 2027.

The MSW program offers courses off campus, serving the Eastern Shore, Cumberland - a community in Western Maryland, and Shady Grove- a suburb accessible to Washington DC, south-central Maryland, and Northern Virginia. The SSW has over 300 field placement sites. Although concentrated in the Baltimore/Washington metropolitan area, which is rich in health facilities and health advocacy and policy organizations, placements are available in the rural areas of the Eastern Shore, Western Maryland, and South-Central Pennsylvania. Specialized MCH placements for Advanced Curriculum students include, the MCH Services Cluster at University of Maryland Medical Systems (UMMS), the UMMS Maternal and Pediatric AIDS Clinic; the Adolescent AIDS Clinic at the Johns Hopkins Hospital, Kennedy-Krieger Institute; varied pediatric services of the National Institutes of Health; the National Children's Medical Center, Washington, D.C.; a public school for pregnant and parenting teens; Women's and Children's Services at Sinai Hospital; the Child Development Center at Georgetown University Medical Center; an innovative prenatal service for Spanish-speaking women; and other settings.

Within the School of Social Work there are additional services including:

- **Social Work Informatics:** The Informatics Office is one of the core sources of support at the SSW. The staff uses a wide range of audio, video, and computer technology to facilitate and enhance the learning environment. The SSW has a variety of servers and operating systems as well as the capacity to create virtual servers to respond to academic, administrative, and research requirements.

- **Computer Services**: Computer Services maintain servers and other computers that run Microsoft and Apple operating systems.

- **SSW Network:** The network is state of the art, utilizing Cisco equipment for wired, wireless (Wireless "G" 54mbps), and voice-over IP (VOIP) network capacity. The campus central computing network team manages it to ensure the highest level of network security and reliability.

- **Computer Center**: The computer lab includes 35 Windows PCs with the latest versions of Microsoft Office Premium (Access, Excel, PowerPoint, Publisher, and Word), SPSS, NVivo, & Antivirus Protection Software. All computers have access to the HSHSL library and other campus resources. Three High-Speed Network-connected Duplex laser printers, a network Document Scanner with Automatic Document Feeders, and copiers round out the equipment available to students.

- **Computer Training Classroom:** We have 41 Windows PCs with the latest versions of Microsoft Office Premium (Access, Excel, PowerPoint, Publisher, and Word), SPSS, NVivo, & Antivirus Protection Software. All computers have access to the HSHSL library and other campus resources. The instructor's computer is connected to a digital projector.

- **Media Center**: The Media Center at the SSW is an 800-square foot studio with broadcast-quality digital and analog media production studio designed to fulfill the presentation needs of students, faculty, and staff. This office makes available to the SSW community, at no or reduced fee, equipment, and resources to facilitate the production and presentation of A/V projects. Available equipment includes camcorders; tripods; data projection for electronic presentation; audiocassette recorders; slide projectors; and overhead projectors. Available services include videotaping, videotape editing, tape duplication, audio & video conferencing, closed circuit interview/observation, and event production.

- **SSW Classrooms**: Every conference and classroom in the school is equipped with computers (Apple MacBook's Pro's capable of running the MAC or Windows operating system), digital projectors, screens, and network connections. Additional equipment (document cameras, videoconferencing gear, etc.) can be brought into the rooms as desired.

- **SSW Auditorium**: The SSW maintains a state-of-the-art 170-seat auditorium equipped with computer, document camera, DVD & VHS playback, audio reinforcement, videoconferencing, and content capture/broadcast capabilities.

- **Videoconferencing Capabilities:** The SSW has built-in portable videoconferencing equipment that can be moved to any room. The equipment supports H.323 IP-based video conferencing and desktop-based conferencing using such applications as Collaborate, Skype, and Zoom.

- **SSW Sponsored Projects Office:** The office offers administrative and financial management services to the SSW faculty, staff, and students. The Director, Research Administrator, and Research Coordinators have many years of pre- and post-award administrative and financial experience. In addition, the Assistant Director, accountants, and accounting specialists provide financial expertise and assistance, assuring that structures are in place to pay employees correctly, to monitor time and effort reporting, to review

expenditures of grant and gift funds, and to provide grant reports to funders. The office works closely with UMB's Office of Research & Development, Sponsored Programs Administration (SPA), Sponsored Projects Accounting and Compliance (SPAC), and the UMB Foundation, Inc., to maintain compliance with policies and procedures.

SSW Centers and Programs include:

- **The Family-Informed Trauma Treatment (FITT) Center:** (Kathryn Collins, MSW, PhD), funded by the Substance Abuse Mental Health Services Agency (SAMHSA), develops, implements, evaluates, and disseminates theoretically sound, family-based interventions for underserved urban and military populations.

- **National Child Welfare Workforce Institute:** (NCWWI, Nancy Dickinson, MSSW, PhD), funded by the Research Foundation of SUNY Albany and ACF, Children's Bureau, aims to increase child welfare practice effectiveness through diverse partnerships that focus on workforce systems development, organizational interventions, and change leadership, using data-driven capacity building, education and professional development.

- **Screening, Brief Intervention and Referral for Treatment (SBIRT**): (Paul Sacco, PhD) is a SAMHSA-funded project focused on developing curriculum and teaching social work students and field instructors about the evidence supported SBIRT intervention. The SBIRT Project combines stand-alone coursework with curricular infusion models to train a plurality of MSW-level social work students. The distal goal of the SBIRT Project is the uptake of this approach among social work students and field instructors.

- **Behavioral Health Workforce Integration, Service, and Education:** (BHWISE) Fellows (Paul Sacco, PhD), funded by HRSA, is a workforce development project aimed at training social work students for practice in the area of integrated behavioral health with children, adolescents, and transitional age youth.

- **University of Maryland Quality Care Network:** UMQCN (Michele Beaulieu, MSW, LCSW-C), UMSSW clinical social workers participate in two population health programs of the University of Maryland Health System.

- **Maryland Longitudinal Data System:** The MLDS Center (PI: Angela Henneberger, PhD) is a state-wide longitudinal data system that brings together PreK-12, postsecondary, and workforce data to inform education and employment policy, programming, and practice.

- **Adult Services: Policy & Practice Initiative, and Competency-Based Pre-Service and In-Service Training for Adult Services' Staff:** APS (Joan Davitt, PhD), The SSW has partnered with the Maryland Department of Human Services, Office of Adult Services to provide quality training for Adult Service staff members at local departments of social services.

- **The Ruth H. Young (RYC) Center for Families and Children** has a mission to promote the safety, permanence, stability, and well-being of children, youth, and families in their

communities through education and training, research and evaluation, and best-practice community service programs.

- **The Social Work Community Outreach Service (SWCOS)**: (Wendy Shaia, EdD, MSW) develops, implements, and evaluates models of effective outreach and community-based services for underserved individuals, families, and communities in Baltimore and Maryland. SWCOS offers social work services for individuals, couples, families, and community-based organizations.

- **The Office of Continuing Professional Education (CPE)**: (Seante Hatcher, MSW). is the premier source for advancing the knowledge base of post-graduate social workers. Created in 1992, to meet the demands of new licensing regulations, CPE has grown to become the second largest Social Work Continuing Education Program in the Nation.

- **Promise Heights:** Promise Heights is a collaborative effort to strengthen a West Baltimore neighborhood by offering services from cradle to college or career. The program is a cornerstone of the federal approach to working in poor communities in a way that is designed to be interdisciplinary, coordinated, place based, and data and results driven. In Upton/Druid Heights, a neighborhood near UMB, about half of the families live in poverty, according to Baltimore City Health Department data. Promise Heights was the recipient of UMB's 2012 Dr. Martin Luther King Jr. Diversity Recognition Awards.

- **The Institute for Innovation and Implementation** serves as a training, technical assistance, evaluation, policy, systems design, and finance center for children's behavioral health systems. The Institute supports state and local governments and organizations to implement effective systems and practices that are designed to best meet the needs of children and youth with complex behavioral health challenges and their families.

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:

All students and faculty have 24/7 access to email (outlook), library and our online learning platform Black Board. Training modules for these platforms are available online and maintained by the SSW informatics office.

- **The Informatics Office** is one of the core sources of support at UMB SSW. The staff maintains the audio, video, and computer technology equipment that supports the learning and research environments of the school. The Informatics Office consists of the Computer Center, the Computer Training Classroom, computer services, IT services, and the Media Center. The Informatics staff are present to support the technology needs of the SSW and will be available during all scheduled online course times. The IDEA Team is the other core source of support at the UMB SSW. The team provides services and support in instructional design, e-Learning, assessments, and online learning technologies for faculty, staff, and students.

- **Student Tech Support:** SSW students benefit from support at multiple levels: campus helpdesk (for login issues, email, Zoom, etc.), SSW Informatics (for office 365 applications, specialized software such as SAS, Stata, SPSS), and the IDEA Team (for Blackboard and other academic technology issues). All three of these entities also provide 24/7 access to web-based help pages, tutorials, and step-by-step documentation for students. Each of these support services provide access via email and telephone and can troubleshoot with screen sharing.

- **Faculty Tech Support:** SSW faculty benefit from support at multiple levels: campus helpdesk (for login issues, email, Zoom, etc.), SSW Informatics (for office 365 applications, specialized software such as SAS, Stata, SPSS), and the IDEA Team (for Blackboard and other academic technology issues). All three of these entities also provide 24/7 access to web-based help pages, tutorials, and step-by-step documentation for students. Each of these support services provide access via email and telephone and can troubleshoot with screen sharing. Faculty additionally have support from online orientations, newsletters, and individualized support from the IDEA Team.

- **Staff Tech Support:** SSW staff benefit from support at multiple levels: campus helpdesk (for login issues, email, Zoom, etc.), SSW Informatics (for office 365 applications, specialized software such as SAS, Stata, SPSS), and the IDEA Team (for Blackboard and other academic technology issues). All three of these entities also provide 24/7 access to web-based help pages, tutorials, and step-by-step documentation for students. Each of these support services provide access via email and telephone and can troubleshoot with screen sharing. Staff additionally have support from online orientations and newsletters from the IDEA Team.

- **Student Assistive Technology Access:** SSW students have access to Kurzweil screen reading software as well as Blackboard Ally, which provides alternative format downloads including audio, braille, optical character recognition, and automated language translations. Students have access to alternate textbooks and course materials, including in electronic or enlarged format. In addition, all courses will include live transcription which will be available to students.

- **Faculty and Staff Assistive Technology Access:** SSW faculty and staff have access to Kurzweil screen reading software as well as Blackboard Ally, which provides alternative format downloads including audio, braille, optical character recognition, and automated language translations.

L. Adequacy of Financial Resources with Documentation

1. Complete <u>Table 1: Resources and Narrative Rationale</u>. 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 narrative rationale for each resource category. If resources have been or will be reallocated to support the proposed program, briefly discuss the sources of those funds.

Table 1: Program Resources:

Resource Categories	Year 1	Year 2	Year 3	Year 4	Year 5
1. Reallocated Funds	**$596,495**	**$652,854**	**$140,000***	**$0**	**$0**
2. Tuition/Fee Revenue (c + g)	$0	$249,000	$564,300	$872,100	$923,400
a. Number of F/T Students	0	15	33	51	54
b. Annual Tuition/Fee Rate	$0	$16,600	$17,100	$17,100	$17,100
c. Total F/T Revenue (a x b)	**$0**	**$249,000**	**$564,300**	**$872,100**	**$923,400**
d. Number of P/T Students	0	0	0	0	0
e. Credit Hour Rate	$0	$830	$855	$855	$855
f. Annual credit hours	0	6	6	6	6
g. Total P/T Revenue (d x e x f)	**$0**	**$0**	**$0**	**$0**	**$0**
3. Grants, Contracts & Other External Sources	$0	$0	$0	$0	$0
4. Other Sources	$0	$0	$0	$0	$0
TOTAL (ADD 1 - 4)	**$596,495**	**$901,854**	**$704,300**	**$872,100**	**$923,400**

Carry over funds from excess in year two (2)

UMB policies allow each school on the campus to have substantial autonomy over budget development and administration. Income to fund the new DSW program will come from two sources. The first source is tuition and fees. The second source is from the Office of the President at UMB, which is providing financial start up resources for the first two years of the DSW program. In addition, the SSW maintains a reserve fund to ensure continuity across school programs.

Table 1 lists the program resources for year one through five for the proposed DSW. As can be seen in Table 1, reallocated funds total $1.2 million dollars designated for startup costs across year 1 FY2026 and year 2 FY2027 of the proposed project. The UMB campus administration will provide these reallocated funds in support of the DSW program at the SSW. This funding source is available to all professional schools on campus and is given to support curriculum innovation and new educational programs viewed as important. This allocation will not impact any existing educational programs on campus or within the SSW. Proposed tuition for the DSW is competitive at $830 per credit hour and is comparable to DSW programs in the Mid-Atlantic region. We anticipate students to enroll full-time only, so no part-time enrollment was included on the budget chart. All students are strongly encouraged to be employed as a Social Worker throughout their matriculation. The FY2026 budget is dedicated to the marketing and development of curriculum, recruitment of students, and hiring designated staff and faculty. The first cohort of 15 students will begin in September of FY2026. Beginning in year two of the program, we project enrollment will increase to 18 students per year and remain in effect thereafter. We anticipate the first cohort of 15 students will graduate in FY 2029. We project a modest budget increase of 3% per year for tuition. Total

projected income for year one through year five is robust and we anticipate covering and exceeding projected costs for the program. To cover the potential short fall of funds for FY2027, we will reallocate and carry forward funds from FY2026 of $140,000 to Year 3. Given the contributions by the campus in year 2 (FY2026) of $652,854 plus the projected tuition income of $249,000 results in $901,854. This final sum will cover the costs of year 2 ($692,082) and allow for the $140,000 to be carried forward to year 3. With the addition of more trainees, year 4 and 5 tuition projections will fund program costs.

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

Table 2 Program Expenditures

Expenditure Categories	Year 1	Year 2	Year 3	Year 4	Year 5
1. Faculty (b + c below)	**$394,128**	**$516,383**	**$531,874**	**$547,830**	**$564,266**
a. # FTE	2.4	3.6	3.6	3.6	3.6
b. Total Faculty Salaries	$306,000	$405,965	$418,144	$430,688	$443,609
c. Total Benefits	$88,128	$110,418	$113,730	$117,142	$120,657
2. Administrative (b + c below)	**$100,224**	**$103,231**	**$106,328**	**$109,518**	**$112,804**
a. # FTE	1	1	1	1	1
b. Total Salary	$72,000	$74,160	$76,385	$78,677	$81,037
c. Total Benefits	$28,224	$29,071	$29,943	$30,841	$31,767
3. Support Staff (b + c below)	**$26,668**	**$27,468**	**$28,292**	**$29,142**	**$30,016**
a. # FTE	0.2	0.2	0.2	0.2	0.2
b. Total Salary	$19,158	$19,733	$20,325	$20,935	$21,563
c. Total Benefits	$7,510	$7,735	$7,967	$8,207	$8,453
4. Equipment	**$6,000**	**$0**	**$0**	**$0**	**$0**
5. Library	$0	$0	$0	$0	$0
6. New or Renovated Space	$0	$0	$0	$0	$0
7. Other Expenses	**$35,000**	**$45,000**	**$17,500**	**$17,500**	**$17,500**
Program Marketing costs	$10,000	$5,000	$2,500	$2,500	$2,500

Travel for conferences etc.	$5,000	$5,000	$5,000	$5,000	$5,000
Standardized Clients for training	$0	$10,000	$10,000	$10,000	$10,000
Consultant Cost for program development	$20,000	$25,000	$0	$0	$0
TOTAL (ADD 1 - 7)	**$562,020**	**$692,082**	**$683,994**	**$703,990**	**$724,586**

Table 2 lists projected expenditures for the proposed DSW program through year five. Salary rates for faculty are determined by the school's administration and are representative of full-time social work faculty/staff positions at peer institutions such as Rutgers University School of Social Work. Fringe benefits are included for faculty at the rate of 28.8% with a 3% COLA included per year. Fringe benefits are calculated for staff at 39.2%. These are projections and may not reflect the budgetary restrictions of the SSW and/or campus allocations and do not guarantee these increases. Salaries include the Director's position (12 months), and assistant director non-tenured faculty member. This budget also designates funds to pay adjunct faculty and full-time faculty of the SSW that are eligible to teach within the DSW program. One .20 FTE position for a research methodologist is also included to coordinate program evaluation, instruction/ coordination of the research sequence and administering the qualifying exam. A post-doctoral DSW fellow will also be recruited to teach and supervise trainees within the program. This fellow will provide valuable services to the program while learning how to instruct and supervise doctoral students. Funds are also designated to hire a full-time DSW program manager that will coordinate all strategic scheduling and management of student recruitment, enrollment, matriculation, and graduation. A .20 FTE is allocated for a staff member from the SSW "Idea Team" to assist in building curriculum for the DSW courses. This team is experienced in curriculum development and andragogy. Since standardized clients will be a component of clinical training, funds are allocated for the recruitment, training, and payment of these skilled actors. A concerted effort will also be made to market this program creatively within the state of Maryland. These marketing funds will pay for our recruitment literature and handouts, web page design, information sessions, mailings, and other activities that will help inform and recruit interested applicants. To help ensure the success of the program, funds to hire an experienced consultant to assist Dr. Pecukonis in developing a successful program is noted. A consultant with experience running a DSW program will be identified and recruited from a peer institution i.e., Rutgers University School of Social Work DSW program. This consultant cost is only for the first two years of the project. Finally, funds are designated for the Director and Assistant Director for travel to national conferences focused on DSW education and the purchase of several laptop computers.

M. Adequacy of Provisions for Evaluation of Program

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

Student learning outcomes for all dimensions of the DSW curriculum will be operationalized and assessed using exams, observational rubrics, and other objective measures. The overall goal of this assessment process is to make certain that our curriculum is preparing students for the workforce. Student learning will be assessed by each course instructor at prescribed intervals during a 15-week semester. Course outcomes and student performance will be evaluated by the DSW faculty at the

completion of each semester for each course offered. These evaluations will include both student and faculty assessment. In this manner, the attainment of goals and objectives for each course will be evaluated. This feedback will be used to create a process of continuous quality improvement for the DSW curriculum. When needed, modifications in the form of curriculum content, methods of instruction, course structure will be implemented. Student feedback for each course and instructor will be collected and used to improve the curriculum through an online anonymous survey. These findings will be distributed to faculty teaching in the DSW program for review, discussion and problem solving. One elected student representative from each cohort year will participate in these meetings. This entire process will be managed by the DSW program director to ensure program improvements are being implemented.

2. Explain how the institution will evaluate the proposed programs' educational effectiveness, including assessments of student learning outcomes, student retention, student and faculty satisfaction, and cost-effectiveness.

The instructor will receive the course evaluations completed by the students enrolled in their course. These reports will be reviewed by the Dean and DSW director as part of the faculty member's annual performance review, and performance improvement plans will be developed if indicated. The DSW program director may conduct additional surveys and focus groups with students to gather feedback about the instruction, curriculum, and the program.

Each year the DSW program will conduct an online survey of alumni, and their employers to collect information about preparedness of graduates for the workforce, curricular elements that have been most impactful, and curricular elements that should be emphasized or eliminated. Alumni will be surveyed on their employment, salary, promotions, and professional activities and leadership accomplishments.

N. Consistency with the State's Minority Student Achievement Goals

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

UMB is deeply committed to fostering equity, diversity, and inclusion across all programs, with a strong focus on recruiting and retaining underrepresented minority students. Recruitment efforts for the DSW program in Clinical Social Work will prioritize outreach to minority students, complemented by targeted support programs to ensure their success. The SSW Office of Student Affairs will coordinate services such as tutoring, counseling, and referrals tailored to student needs.

In alignment with the school's mission, the Office of Diversity, Equity, and Inclusion (ODEI) provides strategic leadership to create an inclusive and equitable environment. ODEI spearheads initiatives centered on social justice, anti-racism, racial healing, and cultural humility while offering training, consultation, and ongoing assessment to strengthen diversity efforts. Additionally, the school supports students through active organizations like the Alliance of Anti-Racist Social Work Practitioners, Queer Community Alliance, and Latinx Unidos for Community Healing and Awareness. These groups foster cultural awareness, social justice, and community building, enriching the overall student experience and promoting an inclusive campus culture.

The school is committed to fostering an inclusive, diverse, equitable, and anti-racist environment and outlined strategic priorities which include enhancing campus climate and belonging by establishing a new DEI office, creating affinity spaces, and strengthening collaboration with the Shady Grove campus, alumni, and community members. The school also aims to improve accountability and transparency by implementing systems for data collection, administering climate surveys, and increasing the visibility of DEI initiatives. Efforts to promote equity and access focus on developing a DEI framework for recruitment and hiring, providing equity training, and supporting inclusive spaces and field education practices. Additionally, the school is advancing learning and professional development through training on anti-racism, restorative practices, and gender identity awareness; expanding field placement opportunities; and integrating equity into curricula and pedagogy. These initiatives reflect the school's mission to promote social justice and equip future social workers to serve diverse communities effectively.

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.

The proposed DSW is not directly related to an identified low productivity program identified by the Maryland Higher Education Commission.

P. Adequacy of Distance Education Programs

1. Provide affirmation and any appropriate evidence that the institution is eligible to provide distance education.

This program is designed to be in-person. That said, all online learning at the SSW is appropriate to the university's mission, is well-resourced, incorporated into our systems of governance and oversight and is comparable in rigor to traditional instructional formats and is evaluated regularly. In addition, students and faculty are provided with effective support to ensure student learning outcomes are met. Recently, a full-time fully online MSW program was approved by our accreditation body CSWE, which certifies the SSW as capable of providing comprehensive online education in terms of curriculum and resources for faculty and students. The SSW is well-endowed with training and support services managing their online offerings, and there are further resources on campus though the Faculty Center for Teaching and Learning which serves the university broadly.

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

UMB is committed to complying with guidelines for the evaluation of distance education set forth by the Council of Regional Accrediting Commissions (C-RAC).

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Market Pulsecheck

An evaluation of employer demand for graduates from the proposed doctoral-level social work program in Maryland and student demand for similar programs.

Analysis Includes:

• Job Posting Trends

• Top Skills

• Top Employers

• Top Industries

• Education Levels

• Degree Completion Trends

The analysis considered demand in Maryland.

Options for Next Steps

Following this analysis, the requesting partner can:

• Choose to discontinue the research, if the leadership is able to make a decision based on this analysis and other institutional research.

• Continue the analysis. A final report of the continued research will address credential design and curricular recommendations.

Growing Labor Market and UMB's Market Position Suggests Favorable Program Opportunity

Preliminary Program Outlook

Employer demand trends suggest a moderate but growing need for doctoral-level social work professionals. In the past 12 months, regional employers advertised a moderate number of relevant job postings (i.e., 980 postings). Between December 2018 and November 2021, average monthly growth in employer demand for doctoral-level social work professionals (i.e., 4.51%) outpaced that of all doctoral professionals (i.e., 1.59%) in Maryland. Further, regional employment in all five most relevant occupations is projected to grow faster than the average for all occupations over the next 10 years. Taken together, these trends suggest a favorable and growing labor market for relevant professionals.

Regional degree completion data suggests relatively consistent student demand and competition in the state. Between the 2015-16 and 2019-20 academic years, relevant completions fluctuated, resulting in an overall decrease of two. Over the same period, the number of institutions reporting relevant completions remained constant (i.e., two). Together, these trends suggest a fairly consistent competitive landscape in Maryland.

The University of Maryland, Baltimore is positioned as the regional market leader. Although relevant completions declined over the profiled period, the University of Maryland, Baltimore increased both the number of relevant completions reported and market share. This indicates that the University of Maryland, Baltimore's program performed well in the market and could indicate potential for further growth. Further, the established doctoral-level social work program may reduce risk to launch and aid in garnering student interest.

Research Limitations

Because institutions self-report data to the NCES, some comparable and competitor programs may have chosen to report completions for a doctoral-level social work program under an alternate CIP code and not be included in the analysis.

Analysis of Job Postings for Doctoral-Level Social Work Professionals in Maryland

Employer demand trends suggest strong need for program graduates. Relevant employer demand for doctoral-level social work professionals grew an average 4.51% per month between December 2018 and November 2021, outpacing the average growth in demand for all doctoral-level professionals (i.e., 1.59%). However, administrators should note, the average monthly growth in demand is likely exaggerated due to a lower number of postings per month and only represents an average monthly increase of four postings. Additionally, employers advertised a moderate number of relevant job postings in the last 12 months (i.e., 980 postings). Together, these trends indicate a growing labor market for relevant professionals.

+4.51%

Average Monthly Demand Growth

December 2018-November 2021, Regional Data

- Average monthly growth of four postings.
- During the same period, demand for all doctoral-level professionals grew 1.59%.

118 job postings

Average Monthly Demand

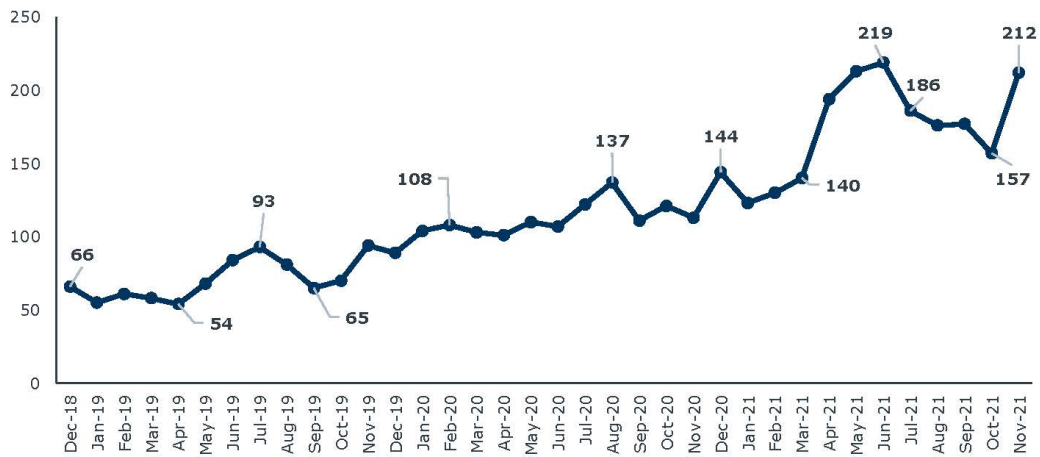*December 2018-November 2021, Regional Data*

980 job postings

Relevant Jobs Posted in the Past Year

December 2020-November 2021, Regional Data

Job Postings for Doctoral-Level Social Work Professionals over Time

December 2018-November 2021, Regional Data

Source: EAB analysis. Emsi Analyst.

eab.com

## Analysis of Employment for Social Work Professionals

Regional employment in all five top relevant occupations is projected to grow faster than the average across 2021 to 2031. This indicates employment opportunities for graduates will likely increase in the next 10 years.

Employment in the occupations "substance abuse, behavioral disorder, and mental health counselors" and "medical and health services managers" may grow significantly faster than average (25.23% and 25.54%, respectively). The Bureau of Labor Statistics suggests that the COVID-19 pandemic will drive demand for mental health treatment. Additionally, the BLS anticipates that the aging baby-boom population, the shift in services from hospitals to health practitioners' offices, and the widespread use of electronic health records will drive increased demand for general healthcare services.

While these occupations represent the most common occupations appearing in job postings for doctoral-level social work professionals, the projected employment data considers all jobs within an occupation at all degree levels.

Projected Employment in Top Occupations[1]

2021-2031, Regional Data
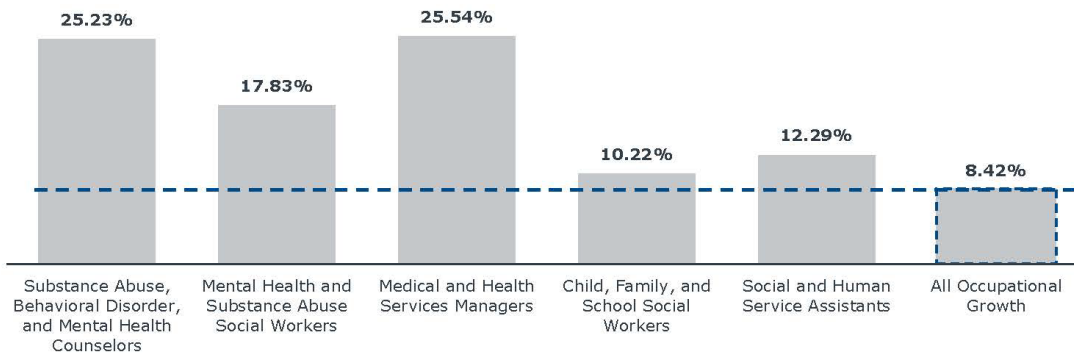
The dashed blue line represents the projected employment growth across all occupations from 2021 to 2031.
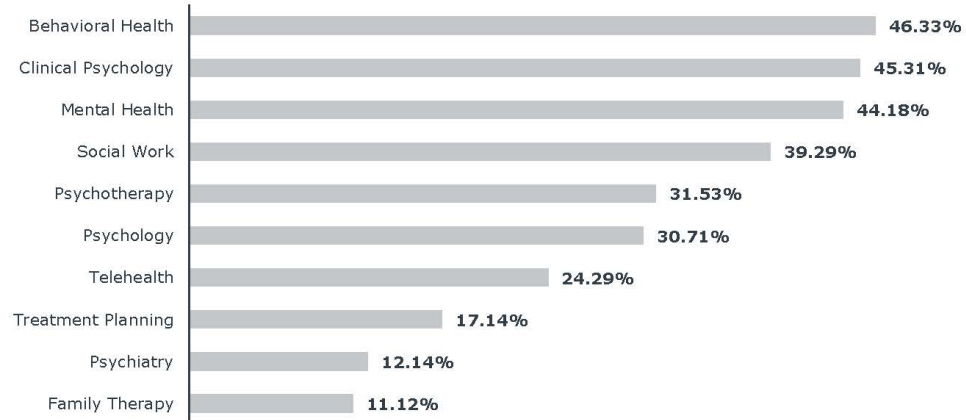
1) Top occupations refer to the occupations in which employers most often seek relevant professionals.

Source: EAB analysis, Emsi Analyst.

eab.com

Top Skills Requested of Doctoral-Level Social Work Applicants

December 2020-November 2021, Regional Data

n-value=980 job postings

Skill	Percentage
Behavioral Health	46.33%
Clinical Psychology	45.31%
Mental Health	44.18%
Social Work	39.29%
Psychotherapy	31.53%
Psychology	30.71%
Telehealth	24.29%
Treatment Planning	17.14%
Psychiatry	12.14%
Family Therapy	11.12%

Top Employers Seeking Doctoral-Level Social Work Applicants

December 2020-November 2021, Regional Data

n-value=980 job postings

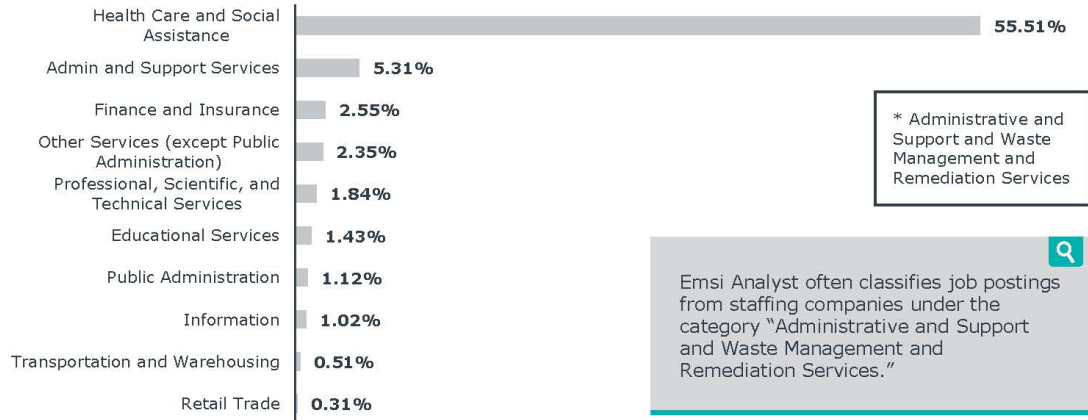| Employer	Percentage
Thriveworks	36.53%
Talkspace	2.76%
Soliant Health	2.65%
Delta T Group	1.73%
PrimeCare Medical	1.63%
Anthem	1.12%
The Renfrew Center	1.12%
UnitedHealth Group	1.02%
Chase Brexton Health Services	0.92%
Congruent Counseling Services	0.92%

Source: EAB analysis. Emsi Analyst.

eab.com

Top Industries Doctoral-Level Social Work Job Postings

December 2020-November 2021, Regional Data

n-value=980 job postings

Industry	Percentage
Health Care and Social Assistance	55.51%
Admin and Support Services	5.31%
Finance and Insurance	2.55%
Other Services (except Public Administration)	2.35%
Professional, Scientific, and Technical Services	1.84%
Educational Services	1.43%
Public Administration	1.12%
Information	1.02%
Transportation and Warehousing	0.51%
Retail Trade	0.31%

> * Administrative and Support and Waste Management and Remediation Services

> 🔍 Emsi Analyst often classifies job postings from staffing companies under the category "Administrative and Support and Waste Management and Remediation Services."
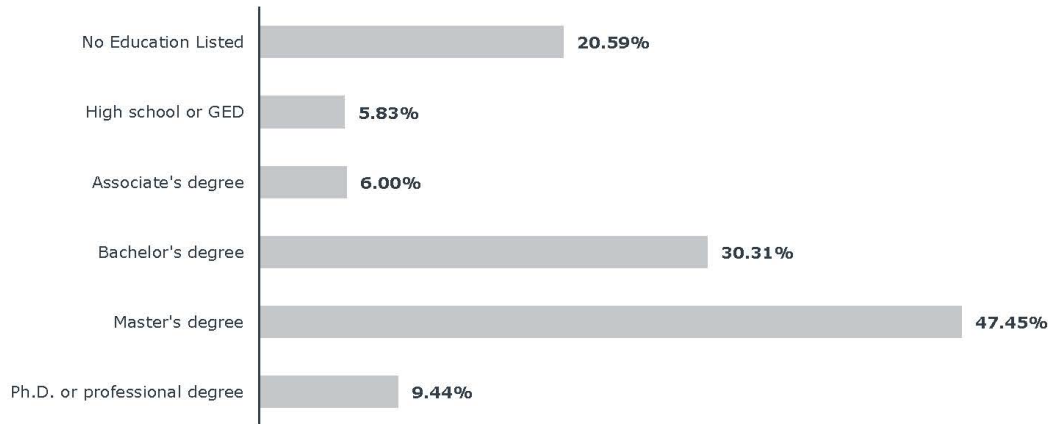
Education Levels Requested of Social Work Applicants

December 2020-November 2021, Regional Data

n-value=10,379[1] job postings

Education Level	Percentage
No Education Listed	20.59%
High school or GED	5.83%
Associate's degree	6.00%
Bachelor's degree	30.31%
Master's degree	47.45%
Ph.D. or professional degree	9.44%

1) The n-value reflects the number of job postings requesting any degree level social work applicants rather than the number of postings requesting doctoral-level social work applicants.

Source: EAB analysis. Emsi Analyst.

eab.com

Analysis of CIP Code 44.0701 ("Social Work") Doctoral-Level Completions in Maryland

Between the 2015-2016 and 2019-2020 academic years, relevant completions fluctuated, resulting in a net decrease of two completions. Over the same period, the number of institutions reporting relevant completions remained constant. These trends indicate student demand and competition remained relatively constant over the profiled period.
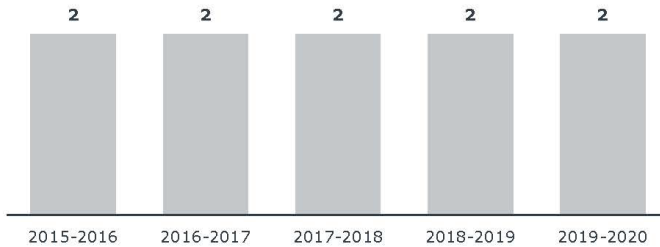
Completions Reported over Time
2015-2016 to 2019-2020 Academic Years, Regional Data
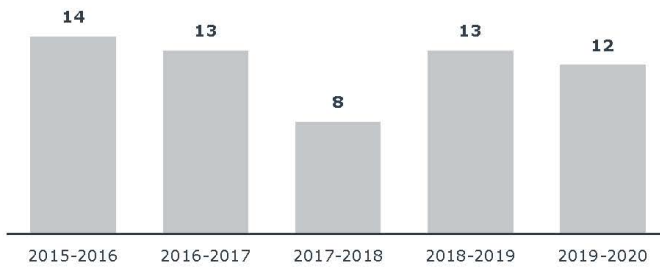
2.00

Net Decrease in Completions

2015-2016 to 2019-2020 Academic Years, Regional Data

• No growth in number of institutions in the same period.

Institutions Reporting Completions over Time
2015-2016 to 2019-2020 Academic Years, Regional Data

0.00%

Institutions Reporting Completions with a 100% Distance-Delivery Option

2019-2020 Academic Year, Regional Data

6.00

Mean Completions per Institution Reporting

2019-2020 Academic Year, Regional Data

• A decrease from the seven mean completions reported in the 2015-2016 academic year.

6.00

Median Completions per Institution Reporting

2019-2020 Academic Year, Regional Data

• A decrease from the seven median completions reported in the 2015-2016 academic year.

Analysis of CIP Code 44.0701 ("Social Work") Doctoral-Level Completions in Maryland

Although the number of relevant completions declined between the 2015-2016 and 2019-2020 academic years, the University of Maryland, Baltimore increased the number of relevant completions reported and their market share. This indicates the University of Maryland, Baltimore's program grew despite a slight decrease in student demand and suggests potential for further program growth amidst only one statewide competitor.

Institutions with Most Reported Completions

2015-2016 and 2019-2020 Academic Years, Regional Data

Institution	Reported Completions, 2015-2016 Academic Year	Market Share, 2015-2016 Academic Year	Reported Completions, 2019-2020 Academic Year	Market Share, 2019-2020 Academic Year
University of Maryland, Baltimore	7	50.00%	9	75.00%
Morgan State University	7	50.00%	3	25.00%

Source: EAB analysis. National Center for Education Statistics.

eab.com

Research Methodology

EAB's market insights research guides strategic programmatic decisions at partner institutions. The Market Insights Service combines qualitative and quantitative data to help administrators identify opportunities for new program development, assess job market trends, and align curriculum with employer and student demand.

Unless stated otherwise, this report includes data from online job postings from December 2020 – November 2021. To best estimate employer demand for doctoral-level social work professionals, the Forum analyzed job postings for relevant occupations (e.g., "health care social workers," "social workers, all other").

Definitions

"CIP" code refers to the Classification of Instructional Programming code.

"Regional" and "statewide" refer to Maryland.

Research Questions

The requesting partner asked:

- **How has demand for graduates of my program evolved over time?**
- **In which industries should the program prepare students to work?**
- **What skills should the program teach to prepare students to meet employer demand?**
- **Which employers demonstrate the greatest demand for graduates?**
- **What education level do employers most frequently request from relevant professionals?**
- **How many students graduate from similar programs regionally, and how has this changed over time?**
- How are similar programs structured?
- How are similar programs delivered?
- What experiential or practical learning do similar programs offer?
- What courses are included in the curricula of similar programs?
- What accreditation do similar programs hold?

Bolded questions were addressed within this analysis; remaining questions will be addressed if partner pursues additional research.

Project Sources

The Forum consulted the following sources for this report:
• EAB's internal and online research libraries
• Emsi Analyst, described below
• U.S. Bureau of Labor Statistics
• U.S. National Center for Education Statistics (NCES)

Labor Market Intelligence Partner: Emsi

This report includes data made available through EAB's partnership with Emsi (formerly Economic Modeling Specialists International), a labor market analytics firm serving higher education, economic development, and industry leaders in the U.S., Canada and the United Kingdom.

Emsi curates and maintains the most comprehensive labor market data sets available for academic program planning, providing real-time job posting data, workforce and alumni outcomes data, and traditional government sources of data. Under this partnership, EAB may use Emsi's proprietary Analyst™ and Alumni Insight™ tools to answer partner questions about employer demand, the competitive landscape, in-demand skills, postings versus actual hires, and skills gaps between job postings and professionals in the workforce. The Emsi tools also provide EAB with in-depth access to unsuppressed, zip-code-level government data for occupations, industries, programs, and demographics. For more complete descriptions of the Emsi tools, visit:

• http://www.economicmodeling.com/analyst/
• https://www.economicmodeling.com/alumni-insight/

To learn more about Emsi and its software and services, please contact Bob Hieronymus, Vice President of Business Development at bob.hieronymus@economicmodeling.com or (208) 883-3500.

Appendix B

Maryland MSW Interest in DSW Survey

Doctor of Social Work Degree
University of Maryland, School of Social Work
Survey

Please read each question carefully and select the response that best describes you.

Q2 What is your age?

_____

Q3 How many years has it been since you graduated from the University of Maryland School of Social Work?

_____

Q4 How old were you when you completed your MSW at Maryland?

_____

Q5 Were you a full-time or part-time student?

☐ Full-time (1)

☐ Part-time (2)

Q6 What was your concentration at the School of Social Work

☐ Clinical (1)

☐ MACO (2)

☐ Combined Clinical/MACO (3)

Q7 What is your gender?

☐ Male (1)

☐ Female (2)

☐ Non-binary / third gender (3)

☐ Other (please specify) (4) _____

Q8 What is your racial identity?

☐ Black or African American (1)

☐ Native American or Alaska Native (2)

☐ Asian (3)

☐ White (4)

☐ Hispanic/Latinx (5)

☐ Native Hawaiian or Pacific Islander (6)

☐ Other (please specify) (7) _____

Q9 At what level are you licensed to practice Social Work within your State?

☐ LMSW (1)

☐ LCSW (2)

☐ LCSW-C (3)

☐ I am not licensed in any State to practice Social Work (4)

Q10 Describe your present social work employment

☐ I am not working as a social worker right now (1)

☐ Social worker in a health care system (2)

☐ Child welfare program (3)

☐ Behavioral/mental health agency (inpatient or outpatient) (4)

☐ Private Practice Clinician full-time (5)

☐ Community agency or non-profit in primarily an administrative role (6)

☐ Social Work Faculty (full-time) (7)

☐ Government employee (federal, state, county, or city) (8)

☐ School social work (9)

☐ Other (please describe) (10) _____

Q11 How many hours do you see clients in private practice each week?

☐ I do not have a private practice (1)

☐ 1 - 5 (2)

☐ 6 - 10 (3)

☐ 11 - 20 (4)

☐ 21 - 30 (5)

☐ 30+ (6)

Q12 The DSW is an advanced practice degree that we hope will be offered at the University of Maryland, School of Social Work. How do you describe your interest in applying for this degree?

☐ Very interested in applying for this degree (1)

☐ Moderately interested in applying for this degree (2)

☐ Mildly interested in applying for this degree (3)

☐ Disinterested right now but might consider it in the future (4)

☐ Not particularly interested in applying for this degree (5)

☐ I will never apply for this degree (6)

Q13 How likely is it that you will apply for this degree in the next year for a Fall 2024 start date?

☐ I will apply within the next year (1)

☐ I will consider applying within the next year (2)

☐ It is unlikely that I will apply in the next year but will consider applying sometime in the future (3)

☐ I have no interest in applying for this degree (4)

Q14 What might be some of your reasons for pursuing a DSW degree? (check all that apply)

☐ Desire to develop advanced clinical skills and knowledge beyond what was available in continuing education (1)

☐ Career advancement (e.g. desire for promotion, more management responsibilities, leadership position) (2)

☐ Desire to carry out rigorous research (3)

☐ Desire to teach (4)

☐ Want to be on par with doctoral trained colleagues (5)

☐ Need to differentiate my private practice or better attract clients (6)

☐ Desire to obtain a doctoral degree but do not want to do a research-intensive PhD program (7)

☐ Desire to obtain a doctoral degree but want or needed to work full-time while enrolled (8)

Q15 Please rank order these factors with "1" being most important to you and "7" being the least important item in your decision to pursue a DSW
_____ Desire to develop advanced clinical skills and knowledge beyond what was available in continuing education (1)
_____ Career advancement (e.g., desire for promotion, more management responsibilities, leadership position) (2)
_____ Desire to carry out rigorous research (3)
_____ Desire to teach (4)
_____ Want to be on par with doctoral trained colleagues (5)
_____ Need to differentiate my private practice or better attract clients (6)
_____ Desire to obtain a doctoral degree but did not want to do a research-intensive PhD program (7)

Q16 I am most interested in a DSW program that has a strong focus on the following: Please rank order the importance of this list with "1" being the most important aspect of DSW education and "10" being the least important for you.

_____ Advanced treatment methods for individuals, families and groups (1)
_____ Learning how to teach social work students within the classroom (2)
_____ Methods of supervising social work students/workers in the clinic or field (3)
_____ Enhancing my leadership skills (4)
_____ Developing advanced research skills (5)
_____ Advanced Social Policy analysis skills (6)
_____ Advanced Community organization skills (7)
_____ Administrative skills for running a community program such as a NPO (8)
_____ Administrative skills for running a private practice program (9)
_____ Promoting social justice and health equity (10)

Q17 How important is it for you that a DSW program focus primarily on advanced clinical skills and treatment methods i.e. CBT, Dialectical Behavior Therapy, Motivational Interviewing, etc.

☐ Extremely important (1)

☐ Very important (2)

☐ Somewhat important (3)

☐ Not particularly important (4)

☐ Not important at all (5)

Q18 Please describe the ideal DSW program that would meet your career goals

_____

_____

_____

_____

_____

Q19 Some DSW programs are all online. Some combine online learning with weekend or evening (in person) classes. What type of DSW program would work best for you? (please explain)

_____

_____

_____

Appendix C:

DSW Programmatic Comparison: University of Maryland, Baltimore and Morgan State University

UMB DSW	MSU DSW	Notes
Clinical Courses		
SWCL 800 Advanced clinical practice theory: Historical perspectives and current contexts The focus of this class will be on theories that were prominent during the early and mid-twentieth century. Drawing primarily from original sources, students will consider key assumptions, constructs, and propositions of each theory in terms of its congruence with social work's principles, values, and mission, as well as its application and relevance to the identities and experiences of diverse communities and populations across a variety of settings.	**DSW 701 Advanced Clinical Practice 1** This clinical methods course advances students' ability to work directly with individuals from urban populations using evidence-based practice and theoretical models "The evidenced-based models of clinical practice addressed in this course are Afrocentric paradigms and modalities	UMB focuses on theory and populations across a variety of settings. MSU focuses on urban populations.
SWCL 801 Neuro-biological basis of human behavior The course provides an overview of the neurobiology shaping human behaviors that inform clinical social work practice. Students will explore the impact of genetics, neuroanatomy and physiology in the etiology of emotional disorders and shaping behavior. We will review basic neuroanatomy, behavior physiology, and neurodevelopment. The course explores the mind and body connection in moderating a person's mental health and psychological wellbeing, relational function, and cognition.	**ODSW 702 Neurobiology and Psychopharmacology in Social Work Practice** Clinical Practice with urban populations must focus on the person in their environment to improve health and wellbeing. This course will focus on the neurobiological implications for behaviors that develop due to the impact of urban living conditions and adaptation. Research supports a neurobiological basis for many conditions experienced by urban populations, including mental health disorders, addictive disorders, and maladaptive behaviors. Students will examine global differences in intervention strategies and currently used pharmacological interventions.	UMB offers separate courses in both neuroscience and pharmacology. MSU offers one course combining neuroscience and pharmacology. MSU course focuses on urban populations.
SWCL 803 Psychopharmacology and complimentary therapeutics This basic course in psychopharmacology will be co-taught by faculty from the Schools of Social Work and Pharmacy. Students will be introduced to the basics of pharmacotherapy addressing the more common DSM-5 diagnoses. Key medications with their clinical indications, symptom management, and dosage will be addressed. Students will be introduced to commonly used medications to treat mood disorders, anxiety, PTSD, personality disorders		Same as note above - UMB offers separate courses in both neuroscience and pharmacology. MSU offers one course combining neuroscience and pharmacology. MSU course focuses on urban populations.

and schizophrenia. The course will emphasize the mechanism, action, contraindications, interactions with other medications and side effects profiles of each class of medications. Complimentary or therapeutic alternatives to traditional western medication will be explored.	72/306	
SWCL 804 Foundational Clinical Practice Models In this seminar-style course, students will explore in depth the three major psychotherapeutic frameworks that have historically guided clinical work in the United States: psychodynami, behavioral, and cognitive models. Students will examine the origins of these modalities, including the sociopolitical context in which these techniques emerged, and the core therapeutic skills and interventions associated with their implementation. Clinical methods will be demonstrated and practiced with simulation and standardized clients.	**ODSW 703 Advanced Clinical Practice 2** The aim of this advanced methods course is to deepen students' understanding of interventions with urban populations. Students will focus on interventions with Children and Adolescents, Couples and Families, the Elderly, and Substance Use Populations. This course will explore urban group dynamics, theories, and methods, with special emphasis on particular groups as a whole. Course content includes using research and theory to plan for and facilitate interventions with urban populations in different settings. The meanings of group experience for members of oppressed groups will be stressed.	UMB's course looks at frameworks that guide clinical practice and students will participate in simulations using standardized clients. MSU's course focuses on interventions used with urban populations.
SWCL 809 Innovations in Clinical Practice In this seminar-style course students will explore a variety of clinical modalities that have developed as part of a "third wave" or move toward integrative practice models. The course will cover concepts like meaning making, trauma-informed care, individual and collective narratives, cultural humility, critical consciousness, mindfulness, relationship skills, the brain-body connection, and/or values-centered action. In teams, students will choose a modality in which they would like to develop deeper knowledge and skill, concentrating on its application within their own area of focus or population of interest. Each student will create and present a case conceptualization; a simulated demonstration video implementing the skills associated with their chosen modality and identify questions or discussion topics for consultation and discussion amongst course participants.	**N/A**	MSU does not offer an integrative practice models course
SWCL 812 Integrative Clinical Practice Models This course will explore different frameworks for integrative practice and give students the opportunity to consider and articulate what aspects of different traditions, tools, and	**N/A**	MSU does not offer a course on integrative social work practice

evidence-supported frameworks might be most helpful in their own area of focus or population of interest. As part of this course, students will research different aspects of effective practice within their specific area of focus including multiple forms of evidence: scholarly research, clinical trainings, and community voices, feedback, and narratives. Each student will develop a training guide, demonstration video, or scholarly paper focused on the application and adaptation of clinical modalities within the sociocultural context of the communities or populations they work alongside.		
SWCL 818 Integration Seminar and Case Presentation This lab will engage students in progressively higher-level critical thinking and clinical decision making using a case-based approach along with simulation. This seminar will allow students to integrate their DSW academic course work with clinical experiences from their employment sites and work with their own clients. Students will present and discuss client cases, their diagnoses, theoretical conceptualization of the presenting problems, treatment planning and specific interventions used. Students will learn methods of effective consultation both in person and using telehealth care devices. Students will learn the process of effectively triaging clients for services, identifying potential risks (health/behavioral health).	**N/A**	MSU does not offer a course on Case Presentation
N/A	**ODSW 804 Spirituality, Religion, and The Helping Tradition (Clinical)** This course is offered to aid the development of culturally competent clinical practitioners who will be critically reflective of and respectfully responsive to the diversity of religious and spiritual values, ethics, and principles that contribute to the world views of those with whom they work. It explores the role of spiritual and religious perspectives in supporting or impeding individuals, families, and group strengths and their interaction within structural systems. Students will gain knowledge of clinical interventions related to V Codes that may be the cause of the underlying conditions related to spiritual or religious problems and the overlap between psychiatric disorders.	UMB does not offer a course on Spirituality and Religion.

SWCL 821 Simulation and Case Consultation Lab Clinical Social Work practice involves not only working with individuals and families but also working alongside other professionals in the care of clients. Effective interprofessional collaboration, teamwork and communication is necessary. This Lab will provide simulation of case consultation along with discussing how to conduct short term consultative services, telehealth services, provide written and verbal feedback of assessments, and how to craft helpful recommendations for colleagues in support of clients well-being.	**ODSW 805 Technology, Human Behavior, and Clinical Social Work Practice** Clinical Social Worker Practitioners provide a variety of services using online technologies. Covid-19 provided urban populations with the convenience of online treatment for medical, mental health, and other health-related disorders and educational and social opportunities. This course explores technology's impact on advanced clinical social work practice with urban populations, colleagues, and institutions and the behaviors that influence technology use. Students will apply ethical standards to advanced clinical practice, debate access to care issues, and use evidence-based interventions and theoretical models on a number of technological platforms.	UMB's course focuses on IPE and uses simulation labs. MSU's course focuses on technology, how it impacts clinical practice specifically with an urban population.
Teaching, Training, and Supervision		
SWCL 813 Social Work Teaching and Training Pedagogy: Theory and Practice The course focuses on the theoretical and technical aspects of delivering social work education. The main focus of the course is to create, the simulation of real-world teaching situations designed to help students develop their teaching practice through a process of critical reflection, integration, and application. course covers social work teaching at both the BSW and MSW levels. The course includes theories of andragogy and reflective practice, curriculum development, teaching methodologies and techniques, general classroom activity, assessment, and evaluation of students, testing methodology, ethical considerations, and professional academic development at BSW and MSW levels of social work education.	**ODSW 803 Social Work Pedagogy and Education** This course examines the role and structure of urban social work education at the BSW, MSW, and Ph.D./DSW levels. Students will be introduced to a variety of philosophies for teaching adult education, strategies for effective learning in the classroom with an emphasis on diversity, social justice, and conflict resolution in the classroom. Content will focus on students' development of teaching skills, curriculum/syllabus design, lecture preparation, assignments and evaluation, and content delivery for effective and competent teaching and the transmission of knowledge and skills in academic and agency settings. Students will learn diverse instructional modalities including remote, asynchronous, hybrid, and Morgan flex. Students will develop a teaching philosophy to include in their professional portfolio.	The two courses share a similar focus, covering foundational concepts and skills relevant to advanced social work practice.
SWCL 817 Social Work Course and Curriculum Design Lab This second course will be a practicum experience for students. Students will be assigned to create and implement a social work training seminar or course at their employment site. For example, Students may guest lecture in	**N/A**	MSU does not offer a teaching practicum course. They offer an online introductory course on teaching methods

an appropriate SW course and provide at least one three-hour lecture on a topic reflecting their clinical specialty of interest. Lectures will be designed and discussed within the classroom format and will be implemented during the semester. Each student teaching activity will be observed by the instructor or videotaped for review along with detailed feedback of their teaching session.		
SWCL 805 Supervision and Mentorship This course explores the principles and practice of supervision, consultation, and mentoring in Clinical Social Work. Students will explore a variety of supervisory approaches models of individual and small group supervision will be demonstrated, practiced. Issues of how to teach and mentor supervisees within a community setting will be discussed. Simulation of clinical supervision with standardized clients across academic and community settings will be employed by students as they explore their role as a supervisor. Students will use exercises on self-awareness, reflective supervision, and learn to employ DEI principles.	**N/A**	MSU does not offer a course on supervision
SWCL 810 Supervision and Mentorship Lab This supervision Lab will be a practicum experience for DSW students. Students will be assigned to supervise a group of social work students working within their field placement or to use their employment environment to practice their supervision strategies. The goal is for students to apply their learning with actual social work trainees/workers, present these experiences to the group and obtain feedback to improve this supervisory experience. At least one supervision session will be videotaped for discussion and evaluation.	**N/A**	MSU does not offer a practice lab on supervision
Leadership Development		
SWCL 811 Leadership Styles in Social Work Practice Lab This course is designed to assist students in developing a personal philosophy and approach to leadership. The course will introduce historical and current theories on leadership. While there are many models of leadership development and	**ODSW 802 Leadership for Social Change** This course is designed to assist a new generation of advanced urban practitioners in developing a professional philosophy and approach to leadership and policy practice skills on a micro, mezzo, and macro level focused on creating a	UMB's course focuses on developing leadership skills across a variety of settings. MSU's course focuses on

practice, there is growing concern that we are amid a leadership crisis: the need and intensity for health and human services is increasing while leadership talent is declining. The performance of the human services sector depends upon, emerging, and current leaders possessing relevant, meaningful, and impactful leadership skills. This course will align leadership theory with leadership practice in the real world at the individual and collective level. This course will focus on promoting leadership skills across a variety of settings including NPO's, state and federal agencies, health care and human service agencies located in Rural Suburban and Urban environments.	more just society. The course will introduce current theories on leadership, reflect on various contexts in which leadership skills are exercised, and consider leadership practices in diverse environments. Conceptual frameworks including social justice, intersectionality, and anti-racism are placed within an ecological perspective to understand the relevance of interactions, dynamics, and consequences of structural bias and discrimination in decision making.	developing advanced urban practitioners.

Diversity, Equity, and Inclusion

SWCL 806 Equity, Diversity, and inclusion in Social Work In this week-long intensive course, students will experientially engage with values, principles, concepts, and frameworks that facilitate justice-oriented, equitable, inclusive practice which recognizes the diversity in experiences and identities among the individuals and communities we work alongside. This will include a deep analysis of the impact of ideologies that sustain racism and other forms of oppression, how these *isms* manifest and endure, and how they impact individuals living within systems of power and privilege across micro and macro levels. Students will be introduced to the Social Change Ecosystem (Iyer, 2017), utilizing this framework to analyze the ways in which they can organize for lasting social change within their own sphere of practice in an effort to create a more equitable and just society. They will also engage with anti-racist anti-oppressive (ARAO) lenses, intersectionality, and Restorative Practices as approaches to clinical work in line with JEDI values. This will include examination of the clinical discourse on both conscious and unconscious bias, self-awareness, awareness of privilege, identity formation, the role of advocacy and a justice orientation in clinical work, and affirming, culturally responsive practice.	**N/A**	MSU does not offer a specific course in DEI but integrates DEI in the curriculum

Administration and Community Organization		
N/A	**ODSW 806 Entrepreneurship- Advanced** This course provides students with an experiential grant writing opportunity. Students develop a research project, not-for-profit, or for-profit business to focus their grant writing. Students will identify potential grants to fund the project. Students will select a grant funding opportunity for development. Students will develop skills in funding justification, developing a budget, project evaluation, and the development of a grant proposal. Scholarly literature, lectures, guest speakers, case studies, class discussions, and student presentations will develop the student's ability to develop and present for funding opportunities their specific project.	UMB does not offer any community organization courses
N/A	**ODSW 808 Non-Profit Management, Fundraising, Board & Workforce** This course will introduce students to different leadership roles in nonprofit organizations. Students will learn evidence-based, theoretical, and practical strategies for board membership, strategic planning, and ethical fundraising. Students explore financial documents and other tools used in the nonprofit sector for budgeting, funding allocation, capital planning, and operations. Students identify a nonprofit organization and develop a plan to join the organization as a board member.	
N/A	**ODSW 706 Social Work and Urban Organizations, Communities and Policy** The course is designed to provide students with the tools to analyze contemporary social welfare programs and the policy endeavors utilized to implement services which impact individuals, families and communities within the urban environment. Students will engage in learning activities which explore issues and programs to understand the relationship between social policy and social work practice.	
Research and Scholarship		
SWCL 802 Philosophy of Science in Social Work This course examines the assumptions, history, and development of scientific methods within		MSU does not offer a course on the

		philosophy of science in social work
social work. The course will cover methods of scientific inquiry and how knowledge is accumulated and validated. Students will explore how theory is constructed and its importance in explaining and predicting behavior. The course provides an in-depth exploration of ontological and epistemological foundations within social work and behavioral sciences. Discussion of theory development and construction along with methodological approaches to testing theory will be explored. Students will discuss important controversies within the field of philosophy of science, the role of values in research and methodological strategies along with the limitations of measurements used in the social sciences. The course will identify and evaluate the building blocks of social science - definitions and concept-formation, descriptive strategies, traditions of interpretation, measurement of variables, strategies of inference, ethics and Forms of explanation of findings.		
SWCL 819 Research Methods/ Quantitative Approaches The purpose of this course is to cover the essential concepts of quantitative research methods. This course will focus on research ethics, building a conceptual framework, question and hypothesis formulation, research design, sampling, level of measurement for variables and scale construction. Students will learn how to design research related to social work practice. The course will review the selection and development of outcome measures, intervention manuals, and fidelity measures as appropriate. It will closely examine the use and development of practice guidelines, evidence-based practice, and meta-analytic procedures.	**ODSW 704 Research Methods for Clinical Practice** This course presents an examination of scientific research methods specifically relating to social work clinical practice. Students acquire basic knowledge and skills to utilize existing social research for practice-related decision making and carry out systematic methods of inquiry in their practice setting. It will prepare the student for basic elements of research design and research methodology, ethical and cultural issues in research, and fosters critical thinking in evaluating existing research.	The two courses share a similar focus, covering foundational concepts and skills relevant to advanced social work practice.
SWCL 814 Research Methods/Qualitative Approaches This course will provide an overview of six types of qualitative research approaches widely used in social work inquiry: 1) content analysis, 2) template analyses, 3) grounded theory, 4) participatory action research, 5) Indigenous and decolonizing methods and 6) immersion approaches. These methods illustrate key differences in research purposes, epistemologies, ethics, and methods. In general, the course will	**ODSW 807 Community Advocacy and Participatory Research for Applied Practice** The purpose of this course is to comprehend the methods of informed decision-making through the lens of empirical research to guide community endeavor development and influence organizational leadership. Students are expected to develop research knowledge and enhance the skills needed for effective evidence-based clinical-community research application. This course will specifically prepare students with the necessary	UMB's course focuses on foundational qualitative research methods. MSU's course focuses on research methods for community/macro level research.

provide an exploration of foundational qualitative research methods and strategies. Students will be introduced to ontological, epistemological structures and theoretical assumptions underlying these methods. Students will learn how appropriately apply these methods with particular emphasis on use within the clinical setting. Students will learn how to both acknowledge and document the lived experience of participants.	skills for effective community level(macro) practice and leadership. Upon completion students will be able to identify and describe theories and relevant models of effective community practice and theoretical models for community organizations. Students will also be introduced to Community Based Participatory Research (CBPR) approaches and methods. This course is also designed for students to learn community practice theories and participatory approaches. Ultimately students will develop skills to execute CBPR studies with community partners and stakeholders.	
SWCL 807 Publication and Grant Writing Lab This workshop will provide students with the necessary information to outline and write a publishable paper, including the selection of a topic, target audience, and appropriate journal. Students will develop skills in organizing content and preparing for the review process. Emphasis will be placed on the development of a literature review for publication in one's area of expertise/interest. Each student will be required to start or complete a paper that expands on work done for a practice course or that reflects their interest and supports the student's clinical practice and/or Capstone project (e.g., a traditional case study or a single system design study).	**ODSW 806 Entrepreneurship- Advanced** This course provides students with an experiential grant writing opportunity. Students develop a research project, not-for-profit, or for-profit business to focus their grant writing. Students will identify potential grants to fund the project. Students will select a grant funding opportunity for development. Students will develop skills in funding justification, developing a budget, project evaluation, and the development of a grant proposal. Scholarly literature, lectures, guest speakers, case studies, class discussions, and student presentations will develop the student's ability to develop and present for funding opportunities their specific project.	UMB's course focuses more on publishing and scholarship. MSU's course is geared toward grant writing.
N/A	**ODSW 705 Applied Statistics** This course equips students with the knowledge needed to use various statistical techniques, emphasizing applications that can be used to address urban social work practice issues. Students will learn to apply descriptive and some intermediate statistical procedures to social problems and human service programs, emphasizing clinical practice settings. In addition, beginning knowledge and use of computer statistical software packages will be emphasized.	UMB does not offer a course in statistics in the DSW curriculum
SWCL 815 Capstone Development Lab This course is focused on developing an idea for their final capstone project. This pro-seminar will encourage students to discuss, research and present their proposals for the capstone project. The instructor will provide instruction and	**ODSW 997 Dissertation/Capstone Guidance** This course enables a doctoral student to develop and execute an approved research agenda in consultation with the student's dissertation/capstone project chairperson and committee. Students register for this course	The capstone/ dissertation is implemented UMB's SWCL 815, SWCL 816, SWCL 820 and MSU's ODSW 997 and

consultation to each student to formulate a project that is clearly defined and doable within the period allocated. By the end of this seminar, students are expected to have a solid draft of their proposal.	continuously to maintain enrollment until the student has completed the dissertation/capstone project. This course is a non-curricular course and is not considered a program credit requirement.	OSDW 998. As a final requirement, the capstone or dissertation demonstrates each student's expertise, critical thinking, and capacity to lead impactful changes in social work.
SWCL 816 Capstone Project Seminar This second seminar will be dedicated to the refinement and submission of their capstone proposal and the initiation of their proposed project including clear documentation of goals and objectives, procedures, and methods, expected outcomes, and timeline for completing the project. Each proposal will be presented to the class who will provide feedback and suggestions.	**N/A**	
SWCL 820 Capstone Project Seminar This seminar is the culmination of the capstone project and a student's last step before being certified for graduation. The first half of the class will be dedicated to assisting students to complete and write up their capstone project. The second half of the class each student will make a formal presentation of their project along with comments about their struggles, learning and future directions of this interest.	**ODSW 998 Dissertation/Capstone Defense** This course allows doctoral students the opportunity to defend their doctoral dissertation/capstone project for approval by the student's dissertation/capstone project chairperson and committee after the dissertation has been completed. After gaining approval of the dissertation/capstone project chairperson and committee, the dissertation/capstone project is submitted to the School of Graduate Studies for the final processing and approval.	

TOPIC: University of Maryland, Baltimore (UMB) proposal to offer Master of Science (MS) in Medical and Health Studies

COMMITTEE: Education Policy and Student Life and Safety

DATE OF COMMITTEE MEETING: December 3, 2024

SUMMARY: The University of Maryland School of Medicine Master of Science (MS) in Medical and Health Studies is to be offered as an off-ramp opportunity for medical students using the existing medical school required course work in the pre-clinical phase of the Renaissance Curriculum (62 credits). This MS will allow students who are unable or no longer desire to progress through the traditional 4-year medical school curriculum to transition to a master's. The MS will only be offered to matriculated medical students who have passed and applied the required pre-clerkship coursework and are in good academic standing. The MS includes coursework in biochemistry, pathophysiology, genetics, therapeutics, professional skills, and clinical knowledge of the provider-patient relationship and psychosocial aspects of patient care.

This MS allows the existing curriculum to pivot and support students who otherwise would withdraw or be dismissed and provide an opportunity for those students to be formally recognized for their academic achievements and financial investment. These students become part of UMB and School of Medicine alumni.

Employment with this degree is projected to increase faster than average over 10 years in all top five relevant occupations across the East Coast and US. Between 2018 and 2022, national degree completions increased by an average annual 8.6%, suggesting rising student demand. The critical role of professionals trained in Medical and Health Studies is recognized as integral to the success of our national health agenda as the baby boomer population needs more heath care and individuals who can support the needs of industry, research, and private entities with a background in biomedical sciences and experience with established professionalism standards.

ALTERNATIVE(S): The Regents may not approve the program or may request further information.

FISCAL IMPACT: No additional funds are required. The program can be supported by the projected tuition and fee revenue.

CHANCELLOR'S RECOMMENDATION: That the Education Policy and Student Life and Safety Committee recommend that the Board of Regents approve the UMB proposal for an MS in Medical and Health Studies.

COMMITTEE RECOMMENDATION: DATE: December 3, 2024

BOARD ACTION:	DATE:
SUBMITTED BY: Alison M. Wrynn 301-445-1992	awrynn@usmd.edu

Dr. Roger J. Ward, EdD, JD, MSL, MPA
Provost and Executive Vice President

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November 1, 2024

Jay A. Perman, MD
Chancellor
University System of Maryland
3300 Metzerott Road
Adelphi, MD 20783

Dear Chancellor Perman:

On behalf of the University of Maryland, Baltimore (UMB) please find attached our proposal to establish a new academic program, *Master of Science in Medical and Health Studies,* within the University of Maryland School of Medicine.

The proposed degree will allow students who are unable or no longer desire to progress through the traditional 4-year medical school curriculum to transition from a doctorate program to a master's program. The program will only be offered to accepted and matriculated medical students who have studied, passed, and applied the required pre-clerkship coursework and remain in academic good standing. The program includes coursework that focuses on biochemistry, pathophysiology, genetics, therapeutics, professional skills and clinical knowledge of the provider-patient relationship and the psychosocial aspects of patient care. This proposal allows the School of Medicine's existing curriculum to pivot and support students who otherwise would withdraw or be dismissed from the University School of Medicine and provide an opportunity for those students to be formally recognized for their academic achievements and financial investment that they made to the School of Medicine and UMB campus. These students become part of UMB and School of Medicine alumni and support.

Should you require additional information, please contact Meghan Bruce Bojo, Executive Director of Academic Administration, at mbojo@umaryland.edu or 410-706-2055.

Regards,

Dr. Roger J. Ward, JD, MSL, MPA
Provost and Executive Vice President

UNIVERSITY SYSTEM OF MARYLAND INSTITUTION PROPOSAL FOR

x	New Instructional Program
	Substantial Expansion/Major Modification
	Cooperative Degree Program
x	Within Existing Resources, or
	Requiring New Resources

University of Maryland, Baltimore

Institution Submitting Proposal

Master of Science in Medical and Health Studies

Title of Proposed Program

Master of Science in Medical and Health Studies	Spring 2025
Award to be Offered	Projected Implementation Date
	51.1401
Proposed HEGIS Code	Proposed CIP Code
University of Maryland Baltimore School of Medicine	Meghan Bruce Bojo
Department in which program will be located	Department Contact
410-706-2055	mbojo@umaryland.edu
Contact Phone Number	Contact E-Mail Address

November 1, 2024

_____   _____
Signature of President or Designee   Date

A PROPOSAL FOR A NEW ACADEMIC PROGRAM at THE UNIVERSITY OF MARYLAND, BALTIMORE FOR A MASTER OF SCIENCE IN MEDICAL AND HEALTH STUDIES

Table of Contents

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.**

The University of Maryland, Baltimore (UMB) submits this proposal to create a Master of Medical and Health Studies within the University of Maryland School of Medicine (UMSOM). We intend to offer it as an off-ramp opportunity for medical students enrolled in the School of Medicine Doctor of Medicine Program using the existing medical school required course work in the pre-clinical phase of the Renaissance Curriculum, with a total of 62 credits for a Master of Science (M.S.). All coursework currently exists. The proposed degree will allow students who are unable or no longer desire to progress through the traditional 4-year medical school curriculum to transition from a doctorate program to a master's program. The program will only be offered to accepted and matriculated medical students who have studied, passed, and applied the required pre-clerkship coursework and remain in academic good standing. The program includes coursework that focuses on biochemistry, pathophysiology, genetics, therapeutics, professional skills and clinical knowledge of the provider-patient relationship and the psychosocial aspects of patient care. Students will be able to apply this knowledge and experience to the practice of patient care, research, and investigation, consulting to enhance health and research outcomes, and to improve patient care, community health, and well-being.

Of note, the concept of a compassionate off-ramp opportunity for medical students has been described as a "moral imperative".[1] Authors highlight that "As stewards of the educational process, medical educators have an ethical obligation to students and the public to create off-ramps, or points along the educational continuum at which learners can reassess their goals and educators can assess competence, that allow for students to leave medicine." Our proposal directly addresses "Recommendation 4: Give credit or credentials for competencies already achieved at a number of points along the medical education continuum (e.g., master's degrees in medical science, certificates in clinical competence) to promote the attainment of alternative degrees."[1] Aagaard et al propose that a master's degree provides evidence of advanced education, commitment to medical sciences and serves as an education pathway to alternative careers.[2]

The attainment of our proposed courses and credit hours far exceeds the typical master's program and spans an extensive breadth of medical science education disciplines. Students will have demonstrated a commitment to completing an intensive medical sciences program. The Master of Medical and Health Studies will be organized around the existing pre-clinical phase medical school curriculum. The student will be required to take and successfully pass the required pre-clinical phase courses of the existing Renaissance Curriculum to be eligible to transition from the doctorate to master's degree. All courses

[1] Bellini, Lisa M. MD; Kalet, Adina MD, MPH; Englander, Robert MD, MPH. Providing Compassionate Off-Ramps for Medical Students Is a Moral Imperative. Academic Medicine 94(5):p 656-658, May 2019. | DOI: 10.1097/ACM.0000000000002568

[2] Aagaard, Eva M. MD; Moscoso, Lisa MD, PhD. Practical Implications of Compassionate Off-Ramps for Medical Students. Academic Medicine 94(5):p 619-622, May 2019. | DOI: 10.1097/ACM.0000000000002569

are hosted by the University of Maryland School of Medicine. The UMB Registrar will facilitate admission and general learner transfer to the master's in medical and health studies from the doctoral program.

The program will prepare students for clinical practice, research, and leadership roles in healthcare and healthcare associated industries. Students from a wide range of backgrounds will be suitable for careers in biomedical sciences such as:

- medical and health service managers
- operations research analysis
- clinical laboratory technologists
- pharmaceutical preparation and manufacturing
- work in private and institutional medical settings
- healthcare insurance
- surgical and medical equipment sales and manufacturing
- biomedical research and development, and
- public health and hospital administrative services

Students will be able to provide expertise in clinical knowledge and skills which includes advanced understanding of human anatomy, physiology, pathology, biochemistry, pharmacology, microbiology, immunology, and understanding of the molecular and cellular basis of diseases. In addition, they will have experience in clinical diagnostic and therapeutic skills, medical ethics and professionalism, patient privacy and confidentiality principles, knowledge of healthcare delivery systems, hands-on experience through clinical skills training, and skills in team collaboration and interprofessional practice.

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

UMB has a long history of developing qualified healthcare professionals. The program in Medical and Health Studies continues this tradition by recognizing the need for professionals with training in biomedical sciences. The knowledge and skills in Medical and Health Studies are crucial to future success in patient care, biomedical research, biomedical industry, and public health.

The proposed Master of Science degree will advance UMB's mission "*to improve the human condition and serve the public good of Maryland and society at-large through education, research, clinical care, and service.* "The M.S. in Medical and Health Studies program directly aligns with the second theme of UMB's strategic plan, "Student Growth and Success," in order to "implement collaborative, inclusive, respectful, and accessible academic learning environments that equitably support and develop students to become exemplary professionals and purposeful contributors to society." Our proposed program leverages existing infrastructure and expertise to expand opportunities for medical students who choose or are unable to continue in the Doctorate level program but continue to desire meaningfully contribute to the biomedical sciences. In order to enhance student growth and success, this program will apply the existing goal of the Renaissance

Curriculum which is to create "life-long learners who … possess humanism, professionalism, scholarship, leadership, critical thinking and attention to social justice and diversity." These students will have experience in clinical diagnostic and therapeutic skills, medical ethics and professionalism, patient privacy and confidentiality principles, knowledge of healthcare delivery systems, hands-on experience through clinical skills training and skills in team collaboration and interprofessional practice.

The proposed program also supports UMB's *fourth theme*, "Innovation and Reimagination," by reimagining the School of Medicine existing curriculum to formally recognize students' academic achievements. These students become part of UMB and School of Medicine alumni and support. We believe this proposal demonstrates, "adopting best-in-class design and pedagogical practices to prepare students for promising, rewarding, and impactful careers" even if those careers occur due to a pivot from a doctorate program to a master's program. Secondly, this is an opportunity for UMB to be an early adopter in the operationalization of an off-ramp master's program. Studies report 12 institutions currently offer an off-ramp master's from their Doctor of Medicine program in the United States.[3,4] Of these, seven institutions are public medical schools.[5]

3. **Provide a brief narrative of how the proposed program will be adequately funded for at least the first five years of program implementation.**

   This program requires no new expenses or costs associated with IT, faculty, or infrastructure. The funding for this program is already budgeted and funded through the School of Medicine Doctoral program. There are no new faculty appointments for this program which relies on existing faculty. There is no new additional revenue for UMSOM.

4. **Provide a description of the institution's commitment to ongoing administrative, financial, and technical support of the proposed program and continuation of the program for a period sufficient to allow enrolled students to complete the program:**

   The UMB School of Medicine has an ongoing commitment to sustaining this new degree program it has developed. Students who are eligible for this degree are already enrolled as medical students and choose to pivot from the doctoral degree to the master's degree by choice or they are unable to academically advance in the Doctoral program by policy. These students are already fully supported administratively through the School of Medicine. The School of Medicine requires no additional resources or administrative support for the Master of Medical and Health Studies. Administrative support includes the Vice Dean of Education, Associate Deans of Student Affairs and Medical Education, and the Assistant Dean of Student Affairs who will provide leadership for the quality and sustainability of the Master of Medical and Health Studies. The administrative services of the School of Medicine Offices of Student Affairs and Medical Education have the existing financial, technical support and collaboration with the UMB registrar to sustain this program.

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[3] Stringham RVV, Whitlock J, Perez NA, Borges NJ, Levine RE. A Snapshot of Current US Medical School Off-Ramp Programs-a Way to Leave Medical School with Another Degree. Med Sci Educ. 2021 Jan 7;31(2):341-343. doi: 10.1007/s40670-020-01175-w. PMID: 34457890; PMCID: PMC8368088.

[4] Petersen KH, Jain NR, Case B, Jain S, Solomon SL, Meeks LM. Compassionate Off-Ramps: The Availability of Terminal Master's Degrees in US Medical Schools. J Med Educ Curric Dev. 2023 Mar 14;10:23821205231164022. doi: 10.1177/23821205231164022. PMID: 36936180; PMCID: PMC10017952.

[5] Medical University of South Carolina, Michigan State University College of Human Medicine, University of California Irving School of Medicine, University of Colorado School of Medicine, University of Michigan Medicine, University of Utah School of Medicine, Wayne State University School of Medicine

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

The 2022 Maryland State Plan articulates three primary goals for postsecondary education: access, success, and innovation. The proposed M.S. in Medical and Health Studies aligns well with the State Plan. The M.S. in Medical and Health Studies meets the regional and State's future needs for advancement and evolution of knowledge by providing a bridge for students from traditional medical studies to healthcare and biomedical associated industries (such as medical and health service managers, operations research analysis, pharmaceutical preparation and manufacturing, private and institutional medical settings), equipping them with a vast foundational medical knowledge, early clinical skills, ethics and professionalism skills essential for navigating the complex healthcare and biomedical science environment. Positions in dynamic fields such as healthcare and biomedical industry require continuous learning, adapting to changes in technology, scientific discovery, and patient needs. The M.S. in Medical and Health Studies can prepare students to meet these challenges by offering the most up-to-date medical knowledge and clinical reasoning, and communication skills. Students can apply their learning directly to real-world healthcare and biomedical settings.

- Access – The M.S. in Medical and Health Studies program aims to Ensure equitable access to affordable and high-quality postsecondary education for all Maryland residents and offers a rigorous curriculum designed by leading experts in the field, ensuring students receive a high-quality education that is both comprehensive and current. This program equips students with advanced knowledge and practical skills, preparing them for successful careers in medical and health sciences.

  This program specifically addresses "Priority 1: Study the affordability of postsecondary education in Maryland." The M.S. in Medical and Health Studies addresses a gap in the current School of Medicine Doctorate program. As it currently exists, students who would be offered this opportunity leave the doctorate program without an attained postsecondary degree. The M.S. in Medical and Health Studies program provides an off-ramp opportunity for students to graduate with an advanced degree even if they do not achieve the doctorate level metrics. Bellini et al write, "As stewards of the educational process, medical educators have an ethical obligation to students and the public to create off-ramps, or points along the educational continuum at which learners can reassess their goals and educators can assess competence, that allow for students to leave medicine." Our proposal directly addresses "Recommendation 4: Give credit or credentials for competencies already achieved at a number of points along the medical education continuum (e.g., master's degrees in medical science, certificates in clinical competence) to promote the attainment of alternative degrees."[1] Aagaard et al propose that a master's degree provides evidence of advanced education, commitment to medical sciences and serves as an education pathway to alternative careers.[6]

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[6] Aagaard, Eva M. MD; Moscoso, Lisa MD, PhD. Practical Implications of Compassionate Off-Ramps for Medical Students. Academic Medicine 94(5):p 619-622, May 2019. | DOI: 10.1097/ACM.0000000000002569

- Success – The M.S. in Medical and Health Studies promotes and implements practices and policies that will ensure student success. Programs such as the proposed M.S. in Medical and Health Studies ensures that a student who has successfully passed the existing preclinical coursework but is unable to or does not want to continue in the Doctorate program has the opportunity to graduate with an advanced master's degree.

  Specifically, the M.S. in Medical and Health Studies addresses "Priority 5: Maintain the commitment to high-quality postsecondary education in Maryland. The M.S. in Medical and Health Studies is a 62-credit master's program. The attainment of our proposed courses and credit hours far exceeds the typical master's program and spans an extensive breadth of medical science education disciplines. Students will have demonstrated a commitment to completing an intensive medical sciences program taught by leading faculty of the University of Maryland School of Medicine.

  The M.S. in Medical and Health Studies addresses "Priority 6: Improve systems that prevent timely completion of an academic program." As Bellini et al write, "As stewards of the educational process, medical educators have an ethical obligation to students and the public to create off-ramps, or points along the educational continuum at which learners can reassess their goals and educators can assess competence, that allow for students to leave medicine."[1] As it currently exists, students who would be offered this opportunity leave the doctorate program without an attained postsecondary degree. UMB and the School of Medicine have a full-service student support model to ensure early identification of students who may be struggling academically and to intervene to improve the likelihood of achieving this graduate level program.

- Innovation – The M.S. in Medical and Health Studies fosters innovation in all aspects of Maryland higher education to improve access and student success**.** The curriculum addresses a national discussion among the Group on Student Affairs (GSA) on off-ramp opportunities for medical students who are unable or no longer desire the Doctorate level program. The GSA addresses issues in medical school admissions, student affairs, student diversity affairs, student financial assistance, and student records at all member medical schools of the Association of American Medical Colleges (AAMC). The GSA involves national committees on Admissions, Student Affairs, Student Diversity Affairs, Student Financial Assistance and Student Records.

  The M.S. in Medical and Health Studies addresses "Priority 8: Promote a culture of risk-taking." As stated previously, this is an opportunity for UMB to be an early adopter in the operationalization of an off-ramp Master program. Studies report 12 institutions currently offer an off-ramp master's from their Doctor of Medicine program in the United States.[3,4] Of these, seven institutions are public medical schools.[5]

  In a 2023 survey of Liaison Committee on Medical Education (LCME)-accredited MD programs, 19% of responding programs offered a terminal master's degree program

(off-ramp).[4] Eight-five (85%) of responding programs that did not have a terminal master program endorsed a benefit to having this opportunity for students. Our proposal directly addresses "Recommendation 4: Give credit or credentials for competencies already achieved at a number of points along the medical education continuum (e.g., master's degrees in medical science, certificates in clinical competence) to promote the attainment of alternative degrees." by Bellini et al.[1,2]

For example, for a student in the existing curriculum, a student may be able to successfully advance within the Renaissance Curriculum academically but unable to pass the national (United States Medical Licensing Exam) USMLE licensing test Step 1 and be dismissed by policy with debt and no degree despite accruing credits consistent with a master's degree. For those who qualify, this proposed program will allow these students who are in good standing to be able market the completed advanced coursework with a degree for employment or future educational experiences, rather than having a gap on their resume.

C. Quantifiable and Reliable Evidence and Documentation of Market Supply and Demand in the Region and State:

The UMSOM periodically receives inquiries from students who are academically unable to continue in the current curriculum or choose to no longer pursue the doctorate program about a master's level program off-ramp option. The existing UMSOM program has roughly 600+ students with 1-2 students per year who find themselves in a position of no longer desiring or no longer academically by policy able to continue the doctorate program. This aligns with Strinham et al. who reviewed 12 institutions who offered a compassionate off-ramp master program and reported that student participation was small, with programs indicating that they graduated < 5 students per year and that when offered most students accepted the opportunity.[3]

Employment with a M.S.-level Medical Health Studies Professionals degree is projected to increase faster than average in all top five relevant occupations across the East Coast and nationally across the next decade, suggesting increasing employment opportunities in the next 10 years.[7] In the prior 12 months (Apr 23-Mar 24), employers advertised relevant job postings with > 49,000 nationally and > 24,000 regionally). Between the 2017-2018 and 2021-2022 academic years, relevant national completions increased by an average annual 8.64%, suggesting rising student demand. The top occupations across job postings nationally and regionally (Apr-23-Mar-24) included:

- Medical and health service managers
- Natural science managers
- Medical scientists (except epidemiologists)
- Operations research analysts
- Operations research analysis
- Clinical laboratory technologists and technicians

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[7] EAB Market Insights. Market Pulsecheck for a Master's Level Medical Health Science Program (Completed for the University of Maryland, Baltimore), April 2024.

- Compliance Officers
- Heath technologists and technicians
- Technical writers
- Chemists
- Occupational Health and Safety Specialists
- Biological Scientists

Medical and Health Services Managers represented 25% of relevant job postings nationally and regionally within medical health sciences professionals. This occupation is projected to grow three times faster than average. The top industries for medical health studies and medical health sciences professionals nationally and regionally include pharmaceutical preparation manufacturing, Colleges, Universities and Professional Schools and General Medical and Surgical Hospitals. The top employers nationally and regionally included Johnson & Johnson and U.S. Department of Veteran Affairs, but the list includes many other pharmaceutical and biotechnology companies. For example, a student with this degree would be a potential fit as a Medical and Health Service Manager. According to the Bureau of Labor Statistics, this profession expects to see a projected job growth rate of 28% through 2032 (Bureau of Labor Statistics). U.S News ranks this job #2 in Best Business Jobs, #5 in STEM Jobs and #6 in Best Jobs (US News).

The critical role of health professions trained in Medical and Health Studies is recognized as integral to the success of our national health agenda as the baby boomer population is anticipated to need more heath care and individuals who can support the needs of industry, research and private entities with a unique background in biomedical sciences as individuals who have the skills to liaison with medical professionals, industry and research in a variety of roles. These students have backgrounds in navigating electronic health records, Health Insurance Portability and Accountability Act (HIPAA), and established professionalism standards. Expansion of the Medical and Health Studies workforce will only grow as our healthcare system continues to evolve.

D. Reasonableness of Program Duplication

No programs exist in Maryland or Washington D.C. that offer a M.S in Medical and Health Studies.

There are no programs that exist similar to our program in that the students eligible for our program have been accepted and matriculated into medical school AND they have already completed all of the course requirements.

We are aware of other regional Medical Health or Sciences programs and/or programs with similar aims.

Table: Program Comparison				
Program	Proposed UMSOM Master of Medical and Health Studies	JHU Master of Science in Anatomy Education	MSU Master of Science in Biomedical Science	GWU Master of Science in Anatomical and Translational Sciences
Length	17 months	11 months	12-20 months	24-48 months
Credit Hours	62	26	32-35	39
Admission Process	N/A	Bachelor's degree requirement	Bachelor's degree requirement	Bachelor's degree requirement
Anatomy	X	x	x	x
Histology	X	X (some)	x	x
Human physiology	X	X (some)		
Cellular Biology	X		x	
Biochemistry	X			
Genetics	X			x
Pharmacology	X			x
Hematology	X			
Immunology	x		x	
Microbiology	x		x	
Microbial pathogens/infectious diseases	x			
Neuroscience	x			
Psychiatry/psychopathology	x			
Pathophysiology and therapeutics of the:				
gastroenterological system				
endocrinologic system	x			
cardiovascular system	x			
renal system	x			
pulmonary system	x			
muscular system	x			
dermatologic system	x			
skeleton	x			
longitudinal experience on understanding the components of clinical medicine and the community	x			
Other			Biostatistics Medical ethics Optional research thesis	Allows for part-time status. Biomedical Ethics

- Johns Hopkins University offers a 1-year Master of Science in Anatomy Education. This 1 year program requires applicants to have been admitted from a bachelor's degree program who wish to pursue medical/health sciences education, admission to a Ph.D. program in biology/biomedicine, and teaching positions in Higher Education. This master's program is a 26-credit program compared to our 62-credit program. The major curricular differences between our program and this master's program are the extensive inclusion of pathophysiology and therapeutics of all major organ systems. (see table)

- Morgan State University (MSU) offers a Master of Science in Biomedical Sciences is a two-track 12-20 month program directed towards students exploring a career in medicine, allied health professions or biomedical industry, and is not designed as a compassionate off-ramp for a MD program. This master's program is a 32-35 credit program compared to our 62-credit program. The major curricular difference between our program and this Master program is the biochemistry, genetics, pharmacology and extensive inclusion of pathophysiology and therapeutics of all major organ systems. MSU offers two tracks, one which includes a research thesis.

- George Washington University offers a Master of Science in Anatomical and Translational Sciences intended to enhance competitiveness for applications to medical schools, health sciences programs, or advanced graduate degree programs (Ph.D.). This master's program is a 39-credit program compared to our 62-credit program. Students participate in the same courses taught during the first year of medical school, including gross anatomy, microscopic anatomy, embryology, neuroanatomy, pharmacology, pharmacogenomics and genomic medicine. The major curricular difference between our program and this master's program is the biochemistry, cellular biology, and extensive inclusion of pathophysiology and therapeutics of all major organ systems.

- UMB School of Graduate Studies, another school within our home institution of UMB, offers a Master of Science in Health Science. While the name of the program may be similar, the objective and course content of the School of Graduate Studies M.S. varies considerably from our program. First, the M.S. in Health Science has online coursework and supplements the Physician Assistant program to support their accreditation requirements and enhance their in-person clinical curriculum. In addition, the M.S. in Health Science is linked to seven additional academic concentrations, all online, including Science Communication, Global Research Ethics, Research Administration, Aging and Applied Thanatology, Global Health Systems, Implementation and Dissemination Science, and Integrative Health and Wellness. Depending on their concentration, graduates of this program will be equipped with the skills to effectively analyze and interpret health science literature, assess healthcare delivery systems and policies, advocate for patient safety and quality management, contribute to public health initiatives and disease prevention efforts, and apply ethical principles in health science practice, preparing them to address complex challenges in diverse environments at local, national, and global scales.

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

The proposed program does not have relevance to the uniqueness and/or institutional identities and missions of HBIs. As mentioned above, although Morgan State University (MSU) has a M.S. in Biomedical Sciences, this program is notably different because it is a two-track 12-20 month program directed towards undergraduate students exploring a career in medicine, allied health professions or biomedical industry. Our program is only available to matriculated medical students who have already completed the required

coursework and are eligible to transfer from the doctoral program to the Master program. In addition, the MSU program is a 32-35 credit program compared to our 62-credit program. The major curricular difference between our program and this Master program is the biochemistry, genetics, pharmacology and extensive inclusion of pathophysiology and therapeutics of all major organ systems. MSU offers two tracks, one which includes a research thesis.

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

The proposed program does not have relevance to the identity of HBIs in Maryland.

G. Adequacy of Curriculum Design, Program Modality, and Related Learning Outcomes

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

    The M.S. in Medical and Health Studies was proposed by the Office of Student Affairs and the Office of Medical Education in the University of Maryland School of Medicine response to medical students being unable to progress through the four-year medical school curriculum. The Medical Education Advising Committee (MEAC) recognized the compelling need for this specific M.S. program as an off-ramp opportunity for selected students to recognize their academic achievements independent of a MD degree.

    The faculty overseeing the program are listed with their credentials in Section I, subsection 1: Adequacy of Faculty Resources.

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

    By the completion of the proposed M.S. in Medical and Health Studies, students will develop core competencies in four key areas: 1) Integrated Medical Knowledge 2) Clinical Problem Solving and Application 3) Interdisciplinary Learning and Team-Based Approaches 4) Preparation for Clinical Practice

    Integrated Medical Knowledge: At the end of the program, students will be able to:

    - Grasp fundamental principles of various medical disciplines including anatomy, physiology, biochemistry, genetics, pathology, and pharmacology.
    - Understand the pathophysiologic basis of diseases and therapeutic management.
    - Acquire in-depth knowledge of specific systems such as hematology, immunology, neurology, gastroenterology, endocrinology, cardiovascular, renal, and pulmonary systems.

<u>Clinical Problem-Solving and Application</u>**:** At the end of the program, students will be able to:

- Apply integrated knowledge to analyze and solve clinical problems.
- Navigate epidemiologic characteristics, diagnostic considerations, and treatment options for various diseases.
- Engage in clinical correlations and case conferences to connect theoretical knowledge with clinical practice.

<u>Interdisciplinary Learning and Team-Based Approaches</u>: At the end of the program, students will be able to:

- Participate in a variety of teaching methods including lectures, small group discussions, team-based learning (TBL) sessions, and lab demonstrations.
- Collaborate with faculty from both basic and clinical departments for comprehensive learning.
- Develop skills through interactive sessions such as workshops, standardized patient exercises, and longitudinal clinical sessions.

<u>Preparation for Clinical Practice</u>: At the end of the program, students will be able to:

- Build a foundation for clinical rotations and clerkships.
- Gain an understanding of the community and context in which medical practice occurs.
- Develop practical skills and competencies necessary for effective clinical practice through hands-on experiences and real-world applications.

3. **Explain how the institution will provide for assessment of student achievement of learning outcomes in the program and document student achievement of learning outcomes in the program.**

Faculty will assess student achievement and mastery of learning outcomes in their courses using a variety of assessments including through satisfactory completion of assignments, scores on Problem Based Learning quizzes and course assessments. Student assessments include customized (National Board of Medical Examiners) NBME® assessments. Students have access to the NMBE self-assessment Services which allows to evaluate their readiness and practice for their upcoming exam, target their studies using diagnostic feedback that highlights areas of strength and weakness, reinforce their knowledge and maximize study time with answer explanations.[8] In addition, during Practice of Medicine I, students have six encounters with standardized patients and physical exam teaching associates (PETAs) that encompass the medical interviews with common medical problems, the neurological exam, head/eyes/ear/nose/throat (HEENT) exam and abdominal exam. These experiences are conducted at the Standardized Patient Program**,** a state-of-the-art facility dedicated to

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[8] https://www.nbme.org/educators/assess-learn/self-assessment-services?utm_medium=email&utm_source=email-cust&utm_campaign=NBME-Updates_8-8-2024

the evaluation, assessment and teaching of technical skills for students, faculty and health care providers throughout the State of Maryland. Students are assessed student's ability to conduct an appropriate history and physical, student's ability to identify presenting problems and risk factors, student's ability to formulate a differential diagnosis and plan of management, student's interpersonal communication skills, including verbal, paraverbal, and nonverbal communications, and overall technique.

Students will also have the opportunity to evaluate courses and faculty through a standard evaluation of every course. Our approach includes ensuring that student learning is in alignment with course learning outcomes, alignment of mission at institutional and program levels, alignment of mission with learning outcomes, then program outcomes with curriculum, flowing down to course outcomes and assignments. Assessment activities emphasize analysis of results and feedback loops for continuous improvement.

4. **Provide a list of courses with title, semester credit hours and course descriptions, along with a description of program requirements**
   Students must complete the following ten core courses at UMSOM for a total of 62 program credits.

Course Name	Course Code	Course Credits	Required
Year 1 Fall			
Intro to Medical School	MED 510	1	x
Foundations	MEDS 511	11	X
Blood & Host Defenses	MEDS 512	8	X
Practice of Medicine 1	MEDS 517	3	x
Year 1 Spring			
Brain & Behavior	MEDS 513	9	X
Digestion & Hormones	MEDS514	7	X
Practice of Medicine 1	MEDS 517	3	X
Year 2 Fall			
Clinical Integration of First Year	MED 520	1	x
Cardiovascular, Renal & Pulmonary	MEDS 521	12	X
Skin, Bones & Musculature	MED 522	7	x

MEDS 510 Introduction to Medical School (1 credit)

Introduction to Medical School (IMS) is a one-week experience that provides students with the necessary information to begin their medical school journey. The course allows students to get to know faculty, staff, mentors, and students from their class and other classes in the School of Medicine. It covers aspects of the curriculum including pedagogical approaches, evaluation, and policies. Students are introduced to Baltimore and the citizens of Baltimore for whom they will be caring. Students are also made aware of the healthcare disparities that affect many of our patients and begin conversations to more fully understand and minimize these disparities. Students receive Unconscious Bias training and

exposure to the care of vulnerable populations. Finally, students are made aware of campus resources and how to access them.

MEDS 511 Foundations (11 credits)

Foundations is an introductory course that consists of several units: Foundations of Anatomy, Foundations of Research and Critical Thinking, and integrated Foundations blocks organized by weeks, each centered around a concept and a clinical problem. The course is designed to prepare MSI students for systems-based courses in the pre-clerkship curriculum and beyond. The course will present the fundamental principles of anatomy, embryology, biochemistry, genetics, physiology, histology, pathology and pharmacology – disciplines crucial for mastering concepts of systems-based pathophysiology and treatment of disease. Understanding the basic principles underlying these disciplines will be invaluable in analyzing the pathophysiologic basis of diseases and the pharmacologic approach to the therapeutic management of disease.

MEDS 512 Blood & Host Defense (8 credits)

Blood and Host Defenses is the second course of the first year. The course covers three major areas: (1) hematology and hematological malignancies, (2) immunology and immune disorders, (3) selected microbial pathogens and introduction to infectious diseases. This integrated course focuses on topics including general principles and clinical applications within hematology and immunology and serves to introduce selected blood and systemic infectious diseases caused by bacteria, viruses, fungi and parasites. The format consists of lectures, small group discussions, clinical correlations, team-based learning sessions, and lab demonstrations. Participation of faculty from both basic and clinical departments will provide an integrated coverage of major topics related to health and disease.

MEDS 513 Brain & Behavior (9 credits)

Brain and Behavior is an integrated multidisciplinary course taught by faculty from Neurology, Neuroscience, Anatomy, Pharmacology, Pathology, Anesthesiology, Pediatrics, and Psychiatry. This 10-week course will cover material that ranges from basic neurosciences to clinical correlates of neural dysfunction, neurological disease states, psychopathology and drugs of addiction. Our goal is to provide a firm foundation of Neuroscience and Psychiatry, adhering to the eight medical education objectives so that the students can utilize this body of knowledge to obtain a better understanding of disorders and diseases of the nervous system. The format of instruction includes lectures, small group sessions, clinical correlates, team-based learning, interactive video workshops, and anatomy as well as pathology labs.

MEDS 514 Digestion & Hormones (7 credits)

This course provides integrated and comprehensive coverage of gastroenterology and endocrinology. For each of these systems, students will receive in-depth instruction in the fundamental principles of anatomy and physiologic function. They will explore the pathophysiologic mechanisms of disease, including infection, inflammation, trauma, and malignancy. For each disease process, they will navigate the pertinent epidemiologic characteristics, diagnostic considerations, and treatment options. Students are guided through the material by clinical, basic science, and pharmacology faculty. The format includes lectures, small group clinical case conferences, anatomy labs and demonstrations, TBL sessions, clinical correlates, and self-directed learning.

MEDS 517 Practice of Medicine 1 (6 credits)

PoM-I is part of multi-year longitudinal experience to provide each student with the understanding the components of clinical medicine and the community in which they will be learning/practicing in. Through a series of lectures, small group workshops, standardized patient exercises and longitudinal clinical sessions with faculty members, students will gain the skills that form the foundation of their clinical rotations and clerkships.

MEDS 520 (Clinical Integration of First Year (1 credit)

Clinical Integration of First Year (CLIFY) is a course designed to review and solidify the material from the first year of medical school. This is a one-week course that emphasizes the content first learned in Foundations, Brain and Behavior, Digestion and Hormones, Blood and Host Defense, and Practice of Medicine. The course will integrate the information learned in the first year with clinical cases in order to provide context and examples of applicability of the material. The course will also reinforce the basic science fundamentals as they apply to these clinical cases. CLIFY will integrate pathophysiology, clinical management, pharmacology, and therapeutics.

MEDS 521 Cardiovascular, Renal & Pulmonary (12 credits)

Cardiovascular, Renal & Pulmonary is a second-year course that covers three major areas: 1) Cardiovascular System, 2) Renal System, 3) Pulmonary System. This integrated course focuses on topics including general principles and clinical applications within those three systems. The format consists of lectures, small group discussions, clinical correlations, and team-based learning sessions. Participation of faculty from both basic and clinical departments will provide an integrated coverage of major topics related to health and disease.

MEDS 522 Skin, Bones & Musculature (7 credits)

Skin, Bone, and Musculature (SBM) is an interdisciplinary course taught by both basic science and clinical faculty, with a strong focus on student-driven interactive learning. SBM consists of three units - Musculoskeletal, Dermatology, and Rheumatology – taught across lectures, small group and team-based learning activities, and dissection in the cadaver lab. The course is designed to equip MSII students with a foundational understanding of musculoskeletal anatomy and pathology, key concepts in Dermatology, and the

pathophysiology of Rheumatological conditions. Course content also includes both pharmacologic and non-pharmacologic therapeutic interventions related to the clinical conditions introduced in each lecture. Beyond the classroom, the course will prepare students for clinical applications of this knowledge during pre-clerkship and clerkship years.

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

   Not applicable.

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

   There are no specialized accreditation or graduate certification requirements for the proposed M.S. in Medical and Health Studies.

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

   Not applicable.

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

   The School of Medicine maintains up-to-date information of its degree programs on their site (https://www.medschool.umaryland.edu/osa/). Since this program is designed to be an off-ramp offered only to students already enrolled in the doctorate program, it will not be advertised with the currently available UMSOM master's degree programs. The Office of Student Affairs website will have information on the curriculum, course descriptions, and degree requirements. The website has links to information about the learning management system, support services, and financial aid already. We affirm that the same information will be available for existing students in the proposed M.S. in Medical and Health Studies.

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 University of Maryland School of Medicine will not advertise, recruit, or use the Office of Admissions for this program. The program is designed as an off-ramp program for students already accepted and matriculated into the Doctorate Program who have already completed the required courses. The M.S. program will be offered to any student who is

academically unable or no longer desires to continue in the doctorate level curriculum. The School of Medicine materials and information will accurately represent the M.S. in Medical and Health Studies.

H.   Adequacy of Articulation

Not applicable.

I.   Adequacy of Faculty Resources
  1. **Provide a brief narrative demonstrating the quality of program faculty. Include a summary list of the 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.**

The M.S. Medical and Health Studies will be directed by the Office of Student Affairs and the Co-Program Directors will be the Associate and Assistant Dean for Student Affairs.

Name	Terminal Degree and Discipline	Rank and FT/PT Status
UMB Faculty		
Kerri Thom	MD, MS	Professor, FT
Elizabeth Lamos	MD	Associate Professor, FT

Many teaching faculty from all departments both clinical and science within the School of Medicine will be involved in teaching. Each course includes a course director, section leaders, and embedded content leads. The following Table includes the course directors who oversee the numerous teaching faculty.

The following Table summarizes information about the faculty who will be responsible for designing and instructing coursework in the M.S. in Medical and Health Studies:

Name	Terminal Degree	Rank and FT/PT Status	Discipline	Course
UMB Faculty				
Joseph Martinez	MD	Professor, FT	Office of Medical Education, Internal Medicine, Emergency Medicine	MED 510
Kerri Thom	MD	Professor, FT	Office of Student Affairs, Epidemiology	MED 510
Rachel Fanaroff	MD	Assistant Professor, FT	Pathology	MEDS 511
Nicholas Carbonetti	PhD	Professor, FT	Microbiology and Immunology	MEDS 512
Madhurima Koka	MD, PhD	Associate Professor, FT	Pathology	MEDS 512
Prachi Mehndiratta	MBBS	Associate Professor, FT	Neurology	MEDS 513

Seema Patil	MD	Associate Professor, FT	Internal Medicine, Gastroenterology	MEDS 514
Norman Retener	MD	Assistant Professor, FT	Internal Medicine	MEDS 517
Afrah Abdul Whalid Ali	MBBS	Assistant Professor, FT	Emergency Medicine	MEDS 520
Neerja Murali	DO	Assistant Professor, FT	Emergency Medicine	MEDS 520
William Grier	MD	Assistant Professor, FT	Internal Medicine, Pulmonology Critical Care	MEDS 521
Neil Agarwal	MD	Assistant Professor, FT	Internal Medicine, Nephrology	MEDS 521
Leen Alblaihed	MBBS, MHA	Assistant Professor, FT	Emergency Medicine	MEDS 521
Ami Patel	MD	Clinical Associate Professor, PT	Internal Medicine, Nephrology	MEDS 521
Idris Amin	MD	Assistant Professor	Neurology, Orthopedics	MEDS 522

2. **Demonstrate how the institution will provide ongoing pedagogy training for faculty in evidenced-based best practices, including training in:**

UMB has a robust process for training faculty and ensuring effective instruction. Based on Quality Matters standards, UMB developed a rubric which details the best practices for distance education; this rubric helps faculty and instructional designers create the courses; assesses the readiness of the course and ensures that the online courses are instructionally and pedagogically sound. The best practices are a synthesis of strategies, activities, design techniques, and organizational items that have been successful in higher education. The specific domains of this checklist are as follows:

- Course overview and introduction to the students
- Course organization and design
- Learning Objectives (competencies)
- Instructional Materials
- Learner Communication, Interaction and Collaboration
- Assessment and Evaluation (measurement)
- Course Technology
- Learner Support

MedScope is a Learning Management System (LMS) and Student Information System (SIS) that was developed by the University of Maryland School of Medicine for use within the Doctor of Medicine program. The MedScope portal provides access to various internal resources, information, and tools for students, faculty, and staff, including academic calendars, course materials, announcements, and links to other services relevant to the

medical school's community. The portal is designed to support the administrative and educational needs of the university's medical doctor program. Those needs include but are not limited to statistical data to track performance related to courses, students, and faculty. The MedScope application is configured to integrate with other third-party applications used by the Medical School such as Banner, MedHub, Examsoft, etc., which allows data from those respective applications to be viewed all from the single MedScope platform.

J. Adequacy of Library Resources

The University of Maryland Health Sciences and Human Services Library (HSHSL) serves as a hub for collaboration and learning on the UMB campus and is one of the largest health sciences libraries in the United States both physically and by collection size. Opened in 1998, the HSHSL building is fully equipped with Wi-Fi and has seating for over 900 users including 41 group study rooms, three computer classrooms, an Innovation Space that includes 3D printers, a presentation and production studio, art gallery, and technology-enhanced meeting and collaboration spaces. The HSHSL website (www.hshsl.umaryland.edu) provides access to a range of resources and services.

The library provides access to 108 databases, 4,737 e-journals, 17,669 e-books, and maintains a collection of 144,416 print books and 7,586 archival print journals. Through the library's interlibrary loan and document delivery services, faculty, staff, and students may acquire articles and other resources not available through the library's collections. The HSHSL also provides access to the UMB Digital Archive, an open access university repository hosting university created research including white papers, research posters, and more.

The HSHSL has a history of innovative and user-centered services. With a team of 26 faculty librarians and 28 library staff, the HSHSL serves UMB's 6,900 students and over 8,000 faculty and staff members in the schools of dentistry, medicine, nursing, pharmacy, social work, and graduate studies. The library also provides access and services to the University of Maryland Medical Center (UMMC) and other affiliated institutions. The library's suite of research services is available for all programs on campus, and includes research and publication strategy consultations, systematic review and expert literature searching services, research impact assessment, public access policy compliance review, and other research services as requested. The library's Center for Data and Bioinformation Services offers consultations and workshops on data access, management, and sharing, as well as support for bioinformatics research, including information on high throughput sequence analysis, DNA, RNA, protein data resources, and research computing.

The HSHSL is home to the National Network of Libraries of Medicine (NNLM) Region 1, an outreach program of the National Library of Medicine, whose mission is to advance the progress of medicine and improve public health and access to health information. The HSHSL has held this competitive and prestigious grant funded designation for over 35

years. In 2021, the HSHSL was also selected to host the NNLM Network Web Services Office (NWSO), which develops and maintains web services for all seven NNLM Regions and other NNLM centers. Through its outreach programming the NNLM Region 1 and the HSHSL regularly reach over 3,000 community members and unaffiliated groups through free workshops, exhibits, and presentations on topics including health literacy, data management, and citizen science.

K. Adequacy of Physical Facilities, Infrastructure and Instructional Equipment

UMB's 65-acre research and technology complex encompasses 57 buildings in west Baltimore near the Inner Harbor. Faculty have offices provided within their respective departments. UMB has adequate facilities, infrastructure, and equipment to support any learning needs of the master's program. Students will have full access to the computing facilities and student services at UMB. Students already have School of Medicine e-mail and library accounts and will have complete journal searching ability via PubMed. UMB possesses computing facilities that include a networked computing environment for support of a broad range of information technology functions, including basic research, clinical research, patient information and general office management.

L. Adequacy of Financial Resources with Documentation

This program requires no new expenses or costs associated with IT, faculty, or infrastructure. The funding for this program is already budgeted and funded through the School of Medicine doctoral program. There are no new faculty appointments for this program which relies on existing faculty. There is no new additional revenue for UMSOM.

TABLE 1: PROGRAM RESOURCES					
Resource Categories	Year 1	Year 2	Year 3	Year 4	Year 5
1.Reallocated Funds	$0	$0	$0	$0	$0
2.Tuition/Fee Revenue (c +g)	$122,754	$126,437	$130,230	$178,849	$184,214
a. Number of F/T Students*	3	3	3	4	4
b. Annual Tuition/Fee Rate	$40,918.00	$42,145.54	$43,409.91	$44,712.20	$46,053.57
c. Total F/T Revenue (a x b)	$122,754.00	$126,436.62	$130,229.72	$178,848.81	$184,214.28
d. Number of P/T Students	0	0	0	0	0
e. Credit Hour Rate	$0	$0	$0	$0	$0
f. Annual Credit Hour Rate	0	0	0	0	0
g. Total P/T Revenue (d x e x f)	$0	$0	$0	$0	$0
3. Grants, Contracts & Other External Sources	$0	$0	$0	$0	$0
4. Other Sources	$0	$0	$0	$0	$0
TOTAL (Add 1 – 4)	$122,754	$126,437	$130,230	$178,849	$184,214
TABLE 2: PROGRAM EXPENDITURES:					
Expenditure Categories	Year 1	Year 2	Year 3	Year 4	Year 5
1. Faculty (b + c) x a	$179,900	$183,498	$187,168	$229,094	$194,730

a. Number of FTE	0.5	0.5	0.5	0.6	0.5
b. Total Salary	$350,000	$357,000	$364,140	$371,423	$378,851
c. Total Benefits	$9,800	$9,996	$10,196	$10,400	$10,608
2. Admin. Staff (b + c) x a	$8,688	$8,948	$9,217	$13,290	$9,778
a. Number of FTE	0.05	0.05	0.05	0.07	0.05
b. Total Salary	$125,000	$128,750	$132,613	$136,591	$140,689
c. Total Benefits	$48,750	$50,213	$51,719	$53,270	$54,869
3. Support Staff (b + c) x a	$4,865	$5,011	$5,161	$5,316	$5,476
a. Number of FTE	0.05	0.05	0.05	0.05	0.05
b. Total Salary	$70,000	$72,100	$74,263	$76,491	$78,786
c. Total Benefits	$27,300	$28,119	$28,963	$29,831	$30,726
4. Technical Support and Equipment	$5,000	$2,000	$2,000	$2,000	$2,000
5. Library	$0	$0	$0	$0	$0
6. New or Renovated Space	$0	$0	$0	$0	$0
7. Other Expenses	$10,000	$10,000	$10,000	$10,000	$10,000
TOTAL (Add 1 – 7)	$208,453	$209,457	$213,546	$259,700	$221,983

The tables represent a budget that assumes that no students are independently admitted to this program. Students will be admitted and graduate from M.S. in Medical and Health Studies program in the year it is approved (typically Year 2) with the assumption that 3 or 4 students will take advantage of this opportunity annually. We have used only in-state tuition per year. The cost remains neutral to the School of Medicine. Funds from the medical doctorate program are reallocated to support this program.

M. Adequacy of Provisions for Evaluation of Program

Students will have the opportunity to evaluate courses and faculty through a standard evaluation of every course. Our approach includes ensuring that student learning is in alignment with course learning outcomes, alignment of mission at institutional and program levels, alignment of mission with learning outcomes, then program outcomes with curriculum, flowing down to course outcomes and assignments. Assessment activities emphasize analysis of results and feedback loops for continuous improvement.

N. Consistency with the State's Minority Student Achievement Goals

UMB is strongly committed to cultural diversity and the recruitment and retention of underrepresented minority students. UMSOM will ensure that students who are under-represented in medicine are aware of the program and afforded the opportunity to pursue this off-ramp M.S. should the opportunity present itself.

O. Relationship to Low Productivity Programs Identified by the Commission

The proposed M.S. is not directly related to an identified low productivity program identified by the Maryland Higher Education Commission.

P. Adequacy of Distance Education Programs

Context of Online Education at UMB

Not applicable.

Supporting Students in Distance Education

Not applicable.

Evaluation and Assessment of Online Courses

Not applicable.

TOPIC: University of Maryland, Baltimore (UMB) proposal for a Master of Science (MS) degree in Artificial Intelligence (AI) for Drug Development

COMMITTEE: Committee on Education Policy and Student Life and Safety

DATE OF MEETING: December 3, 2024

SUMMARY: The Artificial Intelligence for Drug Development (AIDD) graduate program uniquely combines interdisciplinary research and interprofessional education by integrating cutting-edge AI technologies with pharmaceutical sciences. Through its curriculum, students gain a deep understanding of AI's role in advancing drug development, preparing them to excel in clinical care and practice by leveraging AI-driven strategies for improved patient outcomes.

AI has the potential to revolutionize the drug development process by accelerating the identification of drug candidates, predicting their efficacy and safety profiles, and optimizing clinical trial designs. A graduate program focused on advanced AI techniques will attract top talent to the state, both domestically and internationally, which will ensure that Maryland remains at the cutting edge of
drug development and research.

In drug development, AI technologies like natural language processing and machine learning play a crucial role in accelerating processes. The AIDD Program aims to equip professionals with a comprehensive understanding of AI's applications, limitations, and opportunities in pharmaceuticals. Participants explore techniques across various stages, from setting drug development strategy to clinical trial optimization. These skills are becoming critical for a highly skilled workforce in Maryland for the biotech industry and regulatory agencies.

ALTERNATIVE(S): The Regents may not approve the program or may request further information.

FISCAL IMPACT: No additional funds are required. The program can be supported by the projected tuition and fee revenue.

CHANCELLOR'S RECOMMENDATION: That the Education Policy and Student Life and Safety Committee recommend that the Board of Regents approve the UMB proposal for an MS in AI for Drug Development.

COMMITTEE ACTION: DATE: December 3, 2024

BOARD ACTION: DATE:

SUBMITTED BY: Alison Wrynn, awrynn@usmd.edu; 301-445-1992

UNIVERSITY *of* MARYLAND BALTIMORE

Dr. Roger J. Ward, EdD, JD, MSL, MPA
Provost and Executive Vice President

Office of the Provost
220 Arch Street, Room 03-118
Baltimore, MD 21201
410 706 2477

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November 15, 2024

Jay A. Perman, MD
Chancellor
University System of Maryland
3300 Metzerott Road
Adelphi, MD 20783

Dear Chancellor Perman:

On behalf of the University of Maryland, Baltimore please find attached our proposal to establish a new Academic Program, *Master of Science in Artificial Intelligence for Drug Development,* within the School of Pharmacy.

The Artificial Intelligence for Drug Development (AIDD) graduate program uniquely combines interdisciplinary research and interprofessional education by integrating cutting-edge AI technologies with pharmaceutical sciences. Through its curriculum, students gain a deep understanding of AI's role in advancing drug development, preparing them to excel in clinical care and practice by leveraging AI-driven strategies for improved patient outcomes

AI has the potential to revolutionize the drug development process by accelerating the identification of drug candidates, predicting their efficacy and safety profiles, and optimizing clinical trial designs. A graduate program focused on advanced AI technique will attract top talent to the state, both domestically and internationally, which will ensure that Maryland remains at the cutting edge of drug development and research. This influx of skilled professionals would benefit not only the biotech sector but also Maryland's academic and healthcare communities, fostering collaborations that drive innovation and economic growth.

Should you require additional information, please contact Meghan Bruce Bojo, Executive Director of Academic Administration, at mbojo@umaryland.edu or 410-706-2055.

Regards,

Dr. Roger J. Ward, JD, MSL, MPA
Provost and Executive Vice President

108/306

UNIVERSITY SYSTEM OF MARYLAND INSTITUTION PROPOSAL FOR

x _____	New Instructional Program
_____	Substantial Expansion/Major Modification
_____	Cooperative Degree Program
x _____	Within Existing Resources, or
_____	Requiring New Resources

University of Maryland, Baltimore
_____
Institution Submitting Proposal

Master of Science in Artificial Intelligence for Drug Development
_____
Title of Proposed Program

Master of Science in Artificial Intelligence for Drug Development	Fall 2025
_____	_____
Award to be Offered	Projected Implementation Date
	51.2006
_____	_____
Proposed HEGIS Code	Proposed CIP Code
University of Maryland Baltimore School of Pharmacy	Meghan Bruce Bojo
_____	_____
Department in which program will be located	Department Contact
410-706-2055	mbojo@umaryland.edu
_____	_____
Contact Phone Number	Contact E-Mail Address
	November 15, 2024
Rogwos (signature)	
_____	_____

Signature of President or Designee	Date

A PROPOSAL FOR A NEW ACADEMIC PROGRAM at THE UNIVERSITY OF MARYLAND, BALTIMORE SCHOOL OF PHARMACY: MASTER OF SCIENCE IN ARTIFICAL INTELLIGENCE FOR DRUG DEVELOPMENT

Table of Contents

A. Centrality to institutional mission statement 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.**

   The University of Maryland, Baltimore (UMB) is the state's public health, law, and human services university devoted to excellence in professional and graduate education, research, patient care, and public service. As a diverse community of outstanding faculty, staff, and students, and using state-of-the- art technological support we educate leaders in health care delivery, biomedical science, global health, social work, and the law. We emphasize interdisciplinary education and research in an atmosphere that explicitly values civility, diversity, collaboration, teamwork, and accountability. By conducting internationally recognized research to cure disease and to improve the health, social functioning, and just treatment of the people we serve, we foster economic development in the city, state, and nation.

   The University of Maryland School of Pharmacy is pleased to submit a proposal for a new Master of Science (MS) in Artificial Intelligence for Drug Development. To be successful, the learner must complete all required and elective coursework totaling 30 credits. This is an online program and will include synchronous (e.g., live) and asynchronous (e.g., pre-recorded) lectures, readings, and reflections, along with active learning elements, including discussion boards and individual and group assignments. The role of artificial intelligence (AI) in drug development is transformative, enhancing the capabilities of pharmaceutical leaders and researchers. The key focus of the program will be on AI-enabled Predictive Analytics. As manual analysis of expanding patient data becomes impractical, AI emerges as a powerful tool to augment existing methodologies. It has already revolutionized drug development, treatment optimization, and patient care.

   In drug development, AI technologies like natural language processing and machine learning play a crucial role in accelerating processes. The AI for Drug Development program aims to equip professionals with a comprehensive understanding of AI's applications, limitations, and opportunities in pharmaceuticals. Participants explore techniques across various stages, from setting drug development strategy to clinical trial optimization, empowering them to effectively leverage AI for more efficient drug development.

   This program will be offered at UMB. The eight graduate-level required courses in the program cover the principles of drug development, AI and machine learning (ML) methodology, and applications to drug development strategy, pharmacovigilance, precision medicine and clinical trial optimization. The special topics course allows the students to learn the applications of AI/ML to other areas of drug development, regulatory policies, and ethics.

   The proposed degree is consistent with and will advance the mission of the University of Maryland, Baltimore. Through this new program, we will provide our students with the knowledge and skills needed to make a positive impact on communities in Maryland and beyond.

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

The proposed Master of Science degree will advance UMB's mission *"to improve the human condition and serve the public good of Maryland and society at-large through education, research, clinical care, and service."* Additionally, the program contributes to the fulfillment of related strategic goals for UMB, in a number of significant ways:

- A key university strategic theme is to "*excel at interdisciplinary research and interprofessional education, clinical care and practice, and public service.*" The Artificial Intelligence for Drug Development (AIDD) graduate program uniquely combines interdisciplinary research and interprofessional education by integrating cutting-edge AI technologies with pharmaceutical sciences. Through its curriculum, students gain a deep understanding of AI's role in advancing drug development, preparing them to excel in clinical care and practice by leveraging AI-driven strategies for improved patient outcomes. Furthermore, the program's emphasis on AI's potential for accelerating drug development and enhancing pharmacovigilance aligns with the goal of serving the public by delivering safer and more effective therapeutics. It is critical to ensure this highly specialized training provides unique workforce development for Maryland, especially to ensure the skills needed for the continued growth of both the biotech industry and regulatory agencies (e.g., FDA)

- Another strategic theme of the university is *"innovative curricular and co-curricular initiatives that multiply pathways to diverse careers and leadership opportunities inside and outside of academia."* The AIDD graduate program offers innovative coursework that combines advanced AI concepts with pharmaceutical sciences, providing students with a unique skill set for diverse career paths in academia, government, and industry. Through application-oriented learning opportunities, the program fosters leadership skills and offers pathways for students to engage in real-world drug development projects, preparing them for leadership roles. The emphasis on cutting-edge AI technologies in drug development aligns with the goal of multiplying pathways to diverse careers by equipping graduates with the expertise needed to excel in emerging fields at the intersection of AI and pharmaceuticals, and meeting workforce needs.

- And finally, the MS in AI for Drug Development will infuse innovations in instructional design throughout the curriculum, thus creating an accessible, relatable, and sustainable education program that responds to the needs and characteristics of the learner. This aligns specifically with the university's strategic goal *"on the importance of creating accessible education for individuals already engaged in their professions and developing productive discovery-to-delivery research model that serves as a catalyst for economic development."*

3. **Provide a brief narrative of how the proposed program will be adequately funded for at least the first five years of program implementation.**

The program will draw upon existing resources. The School of Pharmacy already has qualified faculty and offers PharmD, PhD, and Master of Science Degrees in Regulatory Science, Pharmacometrics, Palliative Care, Pharmaceutical Sciences, and Pharmaceutical Health Services Research. The school has the administrative and advising infrastructure for students.

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 School of Pharmacy has the administrative, instructional, advising, and facilities infrastructure in place to operate the program. In the event that the program is discontinued, the courses will be offered for a reasonable time period so that enrolled students can finish. The faculty and administrative infrastructure will still be in place to work with students who have not finished the program.

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

Artificial intelligence (AI) is transforming society and work in myriad ways, and the pace of that change will continue to accelerate - unlocking new opportunities and risks for Maryland's residents, workers, and economy.[1] A graduate program focused on AI for drug development is crucial for Maryland given its strong positioning within the biotechnology and pharmaceutical industries. With companies like Emergent BioSolutions, Novavax, and AstraZeneca, and federal research organizations such as the NIH and FDA, Maryland is a key player in drug discovery. This program will solidify the state's status as an innovation leader in life sciences and supports Maryland's broader economic development goals, which focus on promoting innovation, creating high-paying jobs, and strengthening the state's competitive edge in the life sciences sector. By offering a specialized program in AI for drug development, Maryland can further solidify its position as a hub for innovation in life sciences aligning with the Maryland State Plan for Higher Education goal three innovation, priority 8, promoting a culture of risk-taking by fostering innovation in all aspects of Maryland higher education to improve access and student success.

AI has the potential to revolutionize the drug development process by accelerating the identification of drug candidates, predicting their efficacy and safety profiles, and optimizing clinical trial designs. A graduate program focused on advanced AI technique will attract top talent to the state, both domestically and internationally, which will ensure that Maryland remains at the cutting edge of drug development and research. By training a diverse cohort of students, the program could address underrepresentation in the biotech industry, fostering diversity and inclusion within Maryland's workforce. This influx of skilled professionals would benefit not only the biotech sector but also Maryland's academic and healthcare communities, fostering collaborations that drive innovation and economic growth.

A graduate program in AI for drug development will create a pipeline of skilled professionals who can contribute to the growth of existing companies and the establishment of new startups in Maryland. This will lead to job creation and increased economic prosperity for the state. Collaborations with local industry partners would provide students with real-world experience and networking opportunities, enhancing their career prospects, and enriching Maryland's biotech ecosystem which aligns with priority 7, enhance the ways postsecondary education furthers lifelong learning. Maryland's proximity to federal agencies like the FDA and NIH makes it an ideal location for a graduate program in AI for drug development. Partnerships with these agencies could offer students valuable insights into regulatory processes and access to critical resources for research.

1
https://governor.maryland.gov/Lists/ExecutiveOrders/Attachments/31/EO%2001.01.2024.02%20Catalyzing%20the%20Responsible%20and%20Productive%20Use%20of%20Artificial%20Intelligence%20in%20Maryland%20State% 20Government_Accessible.pdf

C. Quantifiable and reliable evidence and documentation of market supply and demand in the region and state:

The following section summarizes the AI industry, including market projections, and also provides workforce needs and projections in the state of Maryland, the northeast region, and nationally.[2]

According to MarketsandMarkets, the market for AI in the biopharma industry is expected to increase from US$198.3 million in 2018 to US$3.88 billion in 2025, with a compound annual growth rate (CAGR) of 52.9 per cent. These values vary across the four regions: North America, Europe, Asia- Pacific (APAC) and Rest of World (RoW), which includes South America, Africa, and the Middle East.
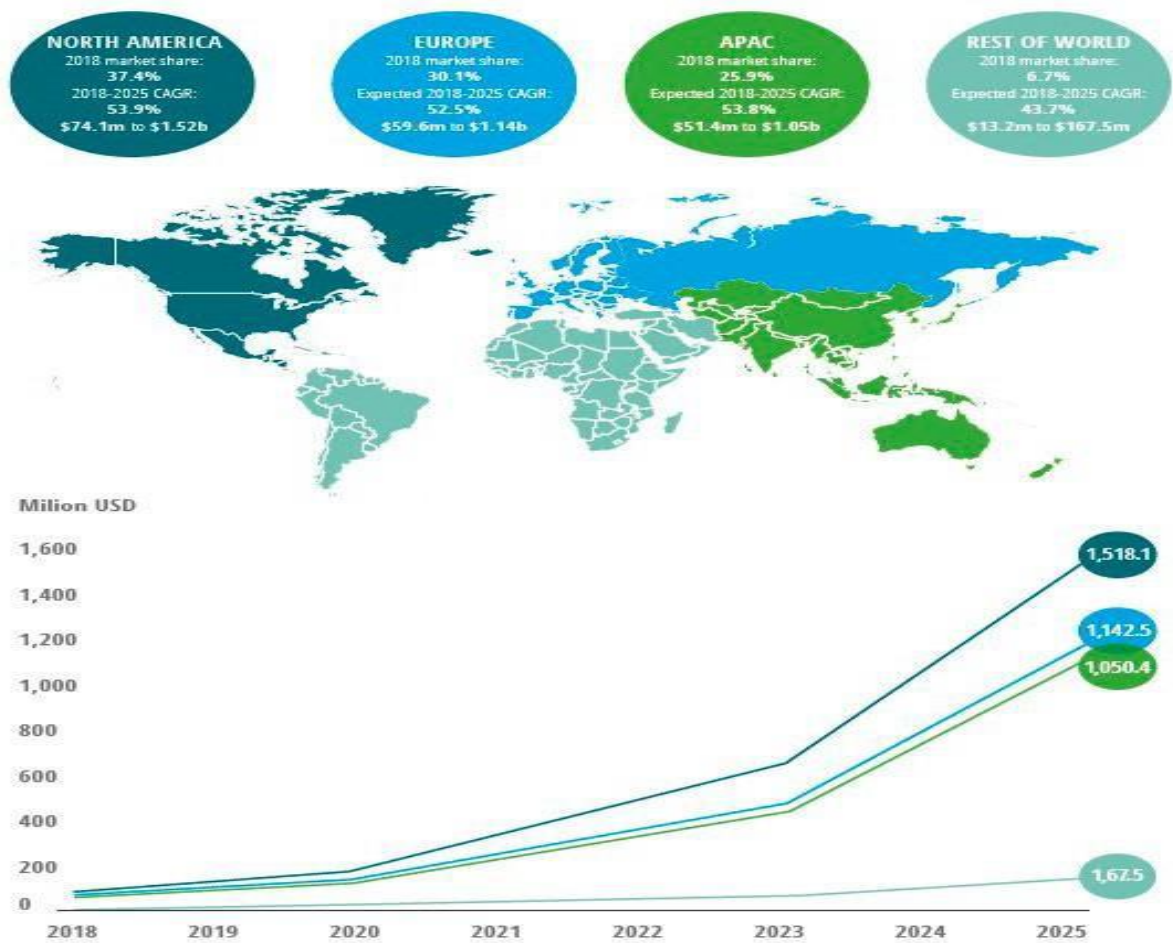
Figure 1 Expected growth in the AI market in pharmaceutical industry, 2018-2025 (excerpt from Deloitte report "Intelligent biopharma: Forging the links across the value chain").

The largest future job gains are expected to be in healthcare, an industry that already has an imbalance, with 1.9 million unfilled openings as of April 2023. It is estimated that there could be demand for 3.5 million more jobs for professionals in the healthcare sector. In the areas of healthcare and STEM professionals, the backbone of pharmaceutical innovations, McKinsey reported a 83% increase in job demand.

Legend: Resilient and growing occupations[2] ■ Stalled but rising occupations[3] ■ Hit and declining occupations[4]

Occupational category	Net change in labor demand, 2022–30, %	Employment, 2022, million
Health professionals	30	6.5
Health aides, technicians, and wellness	30	11.6
STEM professionals	23	7.9
Builders	12	7.0
Managers	11	9.7
Creatives and arts management	11	2.2
Property maintenance	10	4.6
Transportation services	9	5.6
Mechanical installation and repair	7	6.6
Business and legal professionals	7	16.0
Community services	7	6.8
Education and workforce training	3	9.9
Agriculture	2	2.1
Production work	−1	13.3
Food services	−2	13.7
Customer service and sales	−13	14.7
Office support	−18	20.1

[1]Midpoint automation adoption is the average of early and late automation adoption scenarios as referenced in *The economic potential of generative AI: The next productivity frontier*, McKinsey & Company, June 2023.
[2]Resilient during the pandemic, 2019–22, and expected to grow between 2022 and 2030.
[3]Stalled during the pandemic, 2019–22, and expected to rise between 2022 and 2030.
[4]Hit during the pandemic, 2019–22, and continuing to decline between 2022 and 2030.
Source: O*NET; US Bureau of Labor Statistics; Current Population Survey, US Census Bureau; McKinsey Global Institute analysis

Figure 2 Estimated future US job growth by occupational category. (excerpt from McKinsey report "Generative AI and the future of work in America, July 2023").

California accounted for almost one-fifth of all AI job postings in 2023. A small number of the states dominate AI job postings. In 2023, the Top 10 states (CA, TX, VA, NY, MA, WA, IL, FL, PA, NJ) accounted for two-thirds (67.0%) share of all AI job postings. In contrast, the bottom 10 states accounted for only 1.24% share of all AI job postings. Three factors appear to drive a state's share of AI job postings: (a) the state's size in terms of population and economy (e.g., CA, TX, FL, NY, IL, PA); (b) the state being the domicile for some of the world's leading AI universities (e.g., CA, MA, NY); and (c) the state's role as host to major AI-driven industries (e.g., CA: information services, semiconductors, biotech; NY: finance and media; and VA: defense and aerospace). Stripping out the effects of sheer size, AI Jobs Intensity (ratio of AI to all job postings) yields a different picture. Compared to the aggregated US-level AI Jobs

Intensity of 0.56%, Washington DC ranks #1 at 1.75%, followed by VA at 1.36%, with MD not too far behind at 0.83%.

Rank	State	Value		Rank	State	Value
1	DC	1.75%		27	AL	0.30%
2	VA	1.36%		28	MO	0.29%
3	WA	1.20%		29	ID	0.27%
4	CA	1.10%		30	VT	0.25%
5	MA	1.02%		31	NE	0.24%
6	NY	0.97%		32	IN	0.22%
7	MD	0.83%		33	NV	0.22%
8	NJ	0.76%		34	NM	0.22%
9	CT	0.60%		35	TN	0.21%
10	DE	0.58%		36	NH	0.20%
11	IL	0.56%		37	IA	0.19%
12	TX	0.53%		38	WI	0.19%
13	GA	0.50%		39	OK	0.18%
14	PA	0.50%		40	LA	0.17%
15	CO	0.49%		41	KS	0.17%
16	RI	0.47%		42	MT	0.17%
17	UT	0.46%		43	WV	0.17%
18	AR	0.45%		44	ME	0.16%
19	NC	0.45%		45	SC	0.15%
20	MN	0.43%		46	KY	0.15%
21	MI	0.38%		47	SD	0.14%
22	OH	0.34%		48	ND	0.13%
23	AZ	0.33%		49	MS	0.11%
24	HI	0.32%		50	WY	0.10%
25	OR	0.31%		51	AK	0.08%
26	FL	0.31%				

U.S. Total, AI Jobs Intensity = 0.56%

Source: UMD-LinkUp AI Maps Project

Table 1 State's AI jobs intensity (ratio of AI to all jobs postings) during Jan-Dec 2023

Education and the AI in Drug Development Workforce

University of Maryland School of Pharmacy conducted a survey among current professionals (N=43) in the pharmaceutical sector working either at a company, academic institution, or government organization. More than 80% of the professionals identified that they do not have expertise in AI but have some knowledge. A similar number opined that AI has the potential to significantly impact drug development; of which more than 40% thought AI has a transformative potential. Importantly, more than 90% recognized there is a need for professionals trained in the application of AI to drug development in the pharmaceutical industry. Almost all the survey participants indicated they prefer an online training program.

Which best describes your drug development experience?
45 responses

- ● 1-5 years
- ● 6-10 years
- ● > 10 years

31.1%
24.4%
44.4%
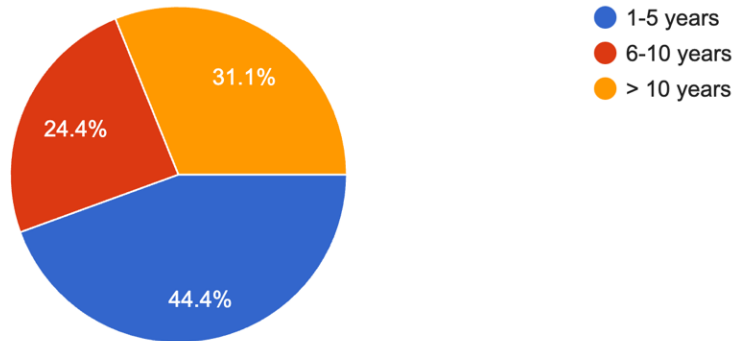
How familiar are you with artificial intelligence (AI) technologies? [1=not at all; 5=expert]
45 responses

- ● 1
- ● 2
- ● 3
- ● 4
- ● 5

40%
11.1%
11.1%
35.6%
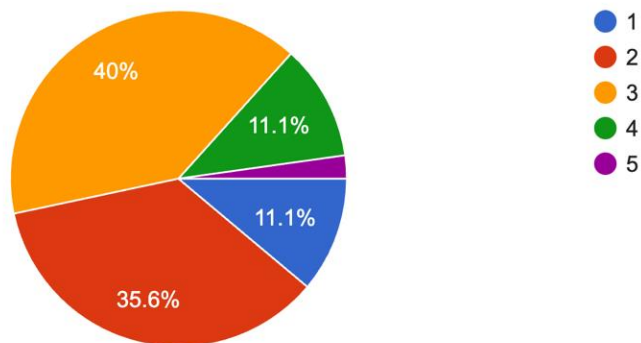
Do you believe AI has the potential to significantly impact drug development processes? [1=no potential; 5=transformative potential]
45 responses

- ● 1
- ● 2
- ● 3
- ● 4
- ● 5

42.2%
40%
17.8%
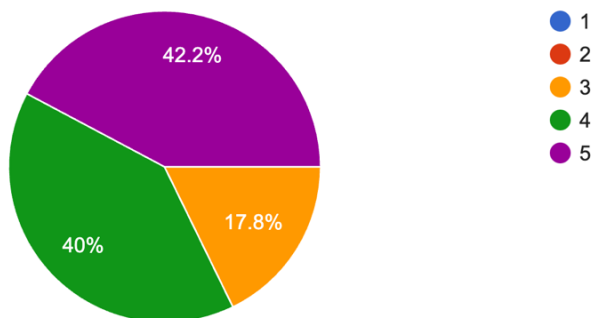
How likely are you to pursue further education in the next two years? [1=not likely; 5=very likely]

45 responses
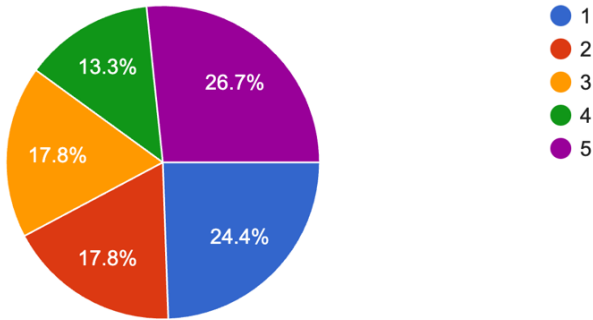
Do you think there is a need for professionals trained in the application of AI to drug development in the pharmaceutical industry?

45 responses
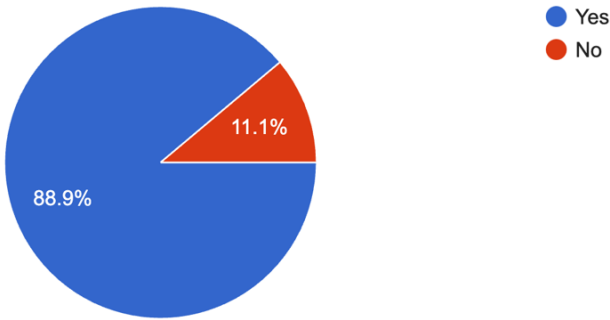
Would you prefer an online or on-campus program for a Masters in AI for drug development?

45 responses
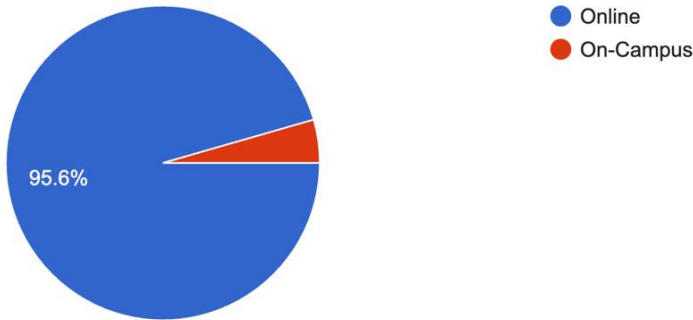
D. Reasonableness of program duplication

University of Maryland School of Pharmacy conducted a careful review of AI-related programs offered by other institutions in the State of Maryland. Currently, there are no graduate programs dedicated to the application of AI for drug development. Most of the institutions offer selected courses in AI, and not full-fledged programs. Bowie State University and Morgan State University offer Master's or Certificate programs in AI/ML. Their programs are focused on general applications of AI such as in the fields of finance, economics, engineering, and robotics. The proposed Master's in AI for drug development is an advanced degree in a highly focused area of drug development. The following table lists related but distinctly different certificate or degree programs offered at other Maryland institutions.

| College	Program	Target Students	Comments
Bowie State University – Computer Science	Artificial Intelligence (AI) and Machine Learning (ML) For ALL for high school students.	The Department of Computer Science has a unique in this country course on AI&ML for the general public, including high school students. Participants will solve real problems in finance and economics, engineering, and healthcare.	UMB's MS program is an advanced degree in a highly focused area of drug development. Aimed at high school students.
Bowie State University – Computer Science	Certificate – Database Management/Artificial Intelligence Track	The Certificate Program in Computer Science is a post-baccalaureate program designed to strengthen the expertise of professionals in key computer science areas. Graduates of the program will be better able to contribute to the increasingly technological work environment of the local economy.	UMB's MS program is an advanced degree in a highly focused area of drug development.
Bowie State University – Computer Science	MS [Artificial Intelligence/Machine Learning Specialization]	Artificial intelligence (AI) includes the study of AI principles and techniques, as well as foundational material on topics such as logic, probability, and language. Topics in the AI concentration include knowledge representation and logical reasoning, robotics, machine learning, probabilistic modeling and inference, natural language processing, cognition, and applications.	UMB's MS program is an advanced degree in a highly focused area of drug development. BSU's MS program is more general and not specific to drug development.
Morgan State University – Computer Science	The Master of Science (M.S.) in Advanced Computing	The MS in Advanced Computing program preserves the core of Computer Science (CS) while possessing unique strength in emerging interdisciplinary areas in Cybersecurity, Artificial Intelligence, Data Science and Cloud Computing.	UMB's MS program is an advanced degree in a highly focused area of drug development. MSU has one course on general principles of AI, not an entire graduate program dedicated to AI.
University of Maryland College Park - College of Computer, Mathematical and Natural Sciences	MS [Applied Machine Learning]	The MS in Applied Machine Learning focuses on the methods and techniques of creating models and algorithms that learn from, and make decisions or predictions, based on data. Successful graduates will apply the learned tools and techniques to a wide variety of real-world problems in areas such as marketing, finance, medicine, telecommunications, biology, security, engineering, social networking, and information technology.	UMB's MS program is an advanced degree in a highly focused area of drug development. The UMD-College Park MS program is more general and has varied applications in multiple fields. It is not specific or focused on drug development.

| University of Maryland College Park – Robert H. Smith School of Business | 12-month executive certificate – Data Science and Machine Learning | Executive post-graduate program certificate provides comprehensive curriculum such as inferential statistics, machine learning, predictive modeling framework to AI and business strategy and data-driven story telling. | UMB's MS program is an advanced degree in a highly focused area of drug development.

UMD-College Park certificate program is tailored for data science in general and not specific to drug development. |
|---|---|---|---|
| University of Maryland College Park – Robert H. Smith School of Business | 7-month professional certificate – Data Science and Business Analytics | Professional certificate program that provides comprehensive curriculum covering as inferential statistics, machine learning, predictive modeling and data- driven story telling. | UMB's MS program is an advanced degree in a highly focused area of drug development. UMD-College Park certificate program is tailored business analytics in general and not specific to drug development. |
| University of Maryland College Park – Robert H. Smith School of Business | 7-month professional certificate – Machine Learning and Artificial Intelligence | Designed for technical professionals with a Data Analytics background who are interested in developing a 360-degree skill profile in Machine learning and Artificial intelligence. | UMB's MS program is an advanced degree in a highly focused area of drug development. UMD-College Park certificate provides general introduction to AI and ML techniques but is not heavily focused on application-based learning within drug development. |

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

Bowie State University, Coppin State University, Morgan State University, and University of Maryland Eastern Shore do not offer master's degree programs similar to our proposed program.

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

The proposed program does not have relevance to the identity of HBIs in Maryland.

G. Adequacy of Curriculum Design, Program Modality, and Related Learning Outcomes

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

   The role of artificial intelligence (AI) in drug development is transformative, enhancing the capabilities of pharmaceutical leaders and researchers. The key focus of the program will be on AI- enabled Predictive Analytics. As manual analysis of expanding patient data becomes impractical, AI emerges as a powerful tool to augment existing methodologies. It has already revolutionized drug development, treatment optimization, and patient care. In drug development, AI technologies like natural language processing and machine learning play a crucial role in accelerating processes. The AI for Drug Development Program aims to equip professionals with a comprehensive understanding of AI's applications, limitations, and opportunities in pharmaceuticals. Participants explore techniques across various stages, from setting drug development strategy to clinical trial optimization, empowering them to effectively leverage AI for more efficient drug development. Dr. Joga Gobburu is the program director for the master's program AI in drug development and will oversee the program. Dr. Gobburu is experienced in artificial intelligence and machine learning, which he has applied to advance pharmacometrics and drug development decision-making. He is a co-founder of PumasAI Inc. and Vivpro Corporation, pioneering companies at the forefront of applying novel innovations in AI/ML to advance pharmacometrics and drug development decision-making.

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

The main objective of this program is to equip students with comprehensive expertise in applying artificial intelligence to the drug development process. Students will gain both a strong theoretical understanding of AI and practical, hands-on skills with AI tools and methodologies, specifically in predictive analytics, natural language processing, and data analytics. Additionally, the program emphasizes integrating AI seamlessly into each phase of drug development, preparing students to address real-world challenges in precision medicine, regulatory intelligence, and clinical trial optimization.

The educational outcomes include:

Comprehensive Understanding of AI-enabled Solutions in Drug Development

- Provide students with a thorough theoretical foundation in artificial intelligence and its diverse applications in drug development.
- Hands-On Proficiency in AI tools and techniques
- Equip students with practical skills through hands-on experiences with AI tools, programming, and methodologies relevant to drug development. This includes application- oriented exercises in areas like natural language processing, data analytics, and machine learning geared towards Predictive Analytics.

Integration of AI into Drug Development Processes

- Foster the ability to seamlessly integrate AI technologies into various stages of drug development. This involves hands-on assignments that simulate real-world scenarios, emphasizing the predictive analytics' application of AI in tasks such as precision medicine, regulatory intelligence, and clinical trial optimization.

After completing this degree, the graduate will be able to:

1. Develop a deep understanding of artificial intelligence (AI) and machine learning (ML) principles and their applications in drug development.
2. Acquire advanced knowledge of drug development to effectively apply AI in these areas.
3. Gain proficiency in data analytics and bioinformatics techniques for analyzing large-scale biological and clinical data sets.
4. Learn to integrate AI-driven approaches into preclinical and clinical development processes, including patient selection and trial design.
5. Develop skills in regulatory intelligence specific to AI applications in drug development.
6. Collaborate with industry partners on real-world projects to gain practical experience in applying AI to drug development challenges.
7. Cultivate leadership and communication skills to effectively convey AI-driven insights to interdisciplinary teams and stakeholders.
8. Explore ethical and societal implications of AI in drug development, including privacy, bias, and transparency.
9. Prepare for diverse career paths in pharmaceutical industry, academia, regulatory agencies, and AI-driven healthcare startups.

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 School of Pharmacy and UMB's School of Graduate Studies have a culture and support structure to assess program educational effectiveness. An assessment committee will review each online course annually using the Quality Matters rubric. Student retention and satisfaction and faculty satisfaction will be assessed continuously. Faculty will be provided with initial and annual educational programs to continue their development as online educators.

    An advisory committee that represents disciplines from all of the professional schools at UMB has been assembled and reviews and provides feedback on every aspect of program development, which will continue during implementation.

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

Course #	Course Name	Course Description
Required Core Courses (30credits) Students take all eight courses (8/8)		
AIDD 601	Introduction to Drug Development (3 Credits)	This graduate-level course provides a comprehensive overview of the drug development process, from drug discovery to post-marketing surveillance. Students will explore the fundamental principles and practices of drug development, including regulatory requirements, preclinical and clinical testing, pharmacovigilance, and marketing approval processes.
AIDD 602	AI Methodology – I (4 Credits)	The applications of Artificial Intelligence and Machine Learning (AI/ML) methodologies are ubiquitous, and the pharmaceutical industry is rapidly adapting to the AI/ML advancements in drug development. This graduate level course will provide an introductory exploration into the methodology and techniques of AI/ML. Students will learn fundamental concepts, methods, and best practices in AI/ML, including problem formulation, data preprocessing, model selection, evaluation, and interpretation. Students learn and apply supervised learning techniques in this course. Through lectures, hands-on exercises, and real-world case studies, students will gain practical skills to apply AI/ML methodologies to problems relevant to healthcare and drug development domain. The students will learn fundamentals of AI/ML programming using the open-source Python programming language

AIDD 603	AI Methodology – II (4 Credits)	This graduate level course will teach intermediate to advanced level concepts and methodology of AI/ML. Students will continue to learn advanced concepts, and best practices in AI/ML, including problem formulation, data preprocessing, model selection, evaluation, and interpretation. Students learn and apply unsupervised learning techniques and neural networks. Through lectures, hands-on exercises, and real-world case studies, students will gain practical skills to apply AI/ML methodologies to problems relevant to healthcare and drug development domain. The students will learn fundamentals of AI/ML programming using the open- source Python software.
AIDD 604	Drug Development Strategy (4 Credits)	This graduate-level course provides a comprehensive overview of the strategic aspects of drug development, focusing on the critical decisions and considerations that drive successful drug development programs. Students will explore the key principles and practices of drug development strategy, including target product profile, regulatory strategy, market access, and lifecycle management.
AIDD 605	Application of AI/ML to Pharmacovigilance (*4 Credits)*	This graduate-level course provides an in-depth exploration of the application of Artificial Intelligence (AI) and Machine Learning (ML) techniques to pharmacovigilance, the science and activities related to the detection, assessment, understanding, and prevention of adverse effects or any other drug-related problems. Students will gain a comprehensive understanding of the role of AI/ML in improving pharmacovigilance processes, including adverse event detection, signal detection, risk management, and regulatory reporting. The course will cover fundamental concepts of AI/ML relevant to pharmacovigilance, such as data preprocessing, feature selection, model development, and evaluation.
AIDD 606	Precision Medicine (*4 Credits)*	In the era of precision medicine, harnessing the power of Artificial Intelligence and Machine Learning (AI/ML) is paramount for making informed and personalized healthcare decisions. This advanced course delves into the cutting-edge methodologies and computational techniques essential for analyzing complex datasets and optimizing treatment strategies tailored to individual patients. Students will explore theoretical foundations and practical applications of AI/ML in precision medicine, focusing on the integration of diverse data sources including genomics and clinical outcomes. Emphasis will be placed on understanding the mechanistic insights derived from molecular data and

		integrating them with statistical models to predict patient responses and optimize treatment regimens. Hands-on sessions will provide students with proficiency in utilizing state-of-the-art AI/ML tools and software platforms for data analysis and visualization. Through case studies and real-world examples, students will develop critical thinking skills to address challenges in personalized healthcare delivery and translate research findings into clinical practice.
AIDD 607	Optimizing Clinical Research (*4 Credits*)	AI-enabled Optimization of Clinical Research delves into the strategic integration of artificial intelligence tools to streamline and enhance various aspects of clinical research, equipping participants with the skills to optimize trial design, data management, and decision-making processes in the evolving landscape of healthcare research. This cutting-edge program is designed to equip students with the knowledge and skills to harness the power of AI/ML in clinical research settings. Across three dynamic modules, participants will explore diverse topics such as predictive modeling for treatment response, leveraging natural history data for rare diseases, and endpoint selection using digital biomarkers in decentralized clinical trials. Through engaging lectures, real-world applications, and hands-on assignments, participants will gain a deep understanding of how AI/ML techniques can revolutionize clinical research, leading to more efficient trial design, precise patient selection, and improved healthcare outcomes.
PHA 758	Special Topics (*3 Credits)*	Special Topics will cover contemporary subjects not addressed in other courses, featuring insights from industry and government leaders through invited lectures, providing a unique and comprehensive perspective on emerging themes in the field of AI and drug development.

Plan of Study:

Year	Semester	Course Number	Credits	Course name
1	Fall	AIDD 601	3	Introduction to Drug Development
1	Fall	AIDD 602	4	AI Methodology - I
1	Spring	AIDD 603	4	AI Methodology – II
1	Spring	AIDD 604	4	Drug Development Strategy
1	Summer	AIDD 605	4	Application of AI/ML to Pharmacovigilance
1	Summer	PHAR 758	3	Special Topics
2	Fall	AIDD 606	4	Precision Medicine
2	Fall	AIDD 607	4	Optimizing Clinical Research

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

   Not applicable

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

   There are no specialized accreditation or certification requirements for this program.

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

   Not applicable

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

   The program will make use of established mechanisms in UMB's School of Graduate Studies and the School of Pharmacy to 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 systems, availability of academic support services and financial aid resources, and costs and payment policies. For example, course materials will be available through Blackboard, a web- interface with which faculty have many years of experience, including with current programs.

   Accepted students will have the background, knowledge, and technical skills needed to undertake a distance education program. Minimally, candidates for admission will possess a baccalaureate degree. Target students include health care professionals, scientists, public policy professionals, current medical cannabis professionals, or those who wish to enter this emerging field.

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 program will be clearly and accurately described on the School of Pharmacy's website and at recruiting events. Recruitment and admissions materials about the program will represent the program and the services available (e.g., need for students to have access to computer that meets the minimum system requirements, broadband internet access, and a headset microphone for participation in web conference).

H. Adequacy of Articulation

   Not applicable

I. Adequacy of Faculty Resources

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 faculty member will teach in the proposed program.**

The University of Maryland School of Pharmacy faculty are internationally recognized for their expertise across the entire life cycle of drug development and clinical care. Broad interest areas include medicinal chemistry, pharmaceutics, pharmacology, clinical care, and pharmaceutical outcomes and policy. These faculty, whose discoveries are impacting the lives of patients around the world, routinely present at national and international conferences, and publish in high impact peer reviewed journals. Many of the faculty hold Fellow status in associations such as the American Association of Pharmaceutical Scientists, the American Chemical Society, and the American College of Clinical Pharmacy, and most serve, or have served, as consulting, *associate, or principal editors of leading journals in the field, including Pharmacology & Therapeutics*, *Journal of Experimental Medicine, Clinical Pharmacokinetics, Cancer Chemotherapy and Pharmacology*, and many others.

The Department of Pharmaceutical Sciences trains students in the design of new drugs and the study of the biological impact of these drugs in the treatment of diseases and disorders. Further divisions within the department include pharmacology, pharmacodynamics, pharmacokinetics, and pharmacogenomics. Within the Department of Practice, Sciences and Health Outcomes Research, faculty train students to perform a full range of medication decision-making functions to serve as part of the patient's health care team. In addition, faculty prepare students to improve health among diverse populations through drug-related research, education, and community outreach. Students enrolled in the proposed program will receive the highest quality education by faculty who are uniquely positioned to teach in this field.

Faculty Members	Course(s)	Status

• **Joga Gobburu, PhD, MBA, FAAPS, FCP, FISOP**
    ○ Professor
    ○ **Program Director, Master of Science in AI for Drug Development**
    ○ Executive Director of Center for Translational Medicine, UMB
	AIDD 601
	 AIDD 604
	 AIDD 605
	 PHAR 758
		Full time

• **Mathangi Gopalakrishnan, MS, PhD, FCP**
    ○ **Program Director, Master of Science in Pharmacometrics**
    ○ Associate Professor, Department of Pharmacy Sciences and Health Outcomes Research, University of Maryland School of Pharmacy
	AIDD 602
	 AIDD 603
		Full time

• **Allison Dunn, PharmD** ○ Assistant Professor of Department of Pharmacy Sciences and Health Outcomes Research, University of Maryland School of Pharmacy	AIDD 606 AIDD 607	Full time

• **Tushar Nitave, MS**
    ○ Adjunct Faculty, Department of Pharmacy Sciences and Health Outcomes Research, University of Maryland School of Pharmacy
    ○ Engineer, Vivpro Corporation
	AIDD 602
	 AIDD 603
		Part time

Dr. Joga Gobburu is a Professor with the School of Pharmacy and the School of Medicine at UMB. He held various positions at the US FDA between 1999 and 2011, where he played a key role in establishing the Division of Pharmacometrics and developing several policies. He is a world-recognized scientific leader in the area of quantitative disease models and their application to decisions. Dr. Gobburu is best known for transforming the field of Pharmacometrics across the world into a decision-supporting science and establishing a Pharmacometrics Fellowship program at the FDA. He received numerous FDA awards, including the Outstanding Achievement Award, and has been recognized with the Outstanding Leadership Award from the American Conference on Pharmacometrics (2008), the Tanabe's Young Investigator Award from the American College of Clinical Pharmacology (ACCP) (2008), and the Sheiner-Beal Pharmacometrics Award from the American Society of Clinical Pharmacology and Therapeutics in 2019. Dr. Gobburu is on the Editorial Boards of several journals and is a Fellow of ACCP, AAPS, and the International Society of Pharmacometrics. He has published over 120 papers and book chapters, and his doctoral dissertation focused on the application of Artificial Neural Networks to drug discovery and development.

Dr. Mathangi Gopalakrishnan is an Associate Professor at the Center for Translational Medicine, University of Maryland School of Pharmacy. Dr. Gopalakrishnan, trained as a quantitative clinical pharmacologist and biostatistician, possesses over 11 years of expertise employing cutting-edge quantitative methodologies, including artificial intelligence and machine learning methods. Her proficiency extends to the domains of clinical trial design and the advancement of precision therapeutics, particularly within pediatric, maternal, and critically-ill patient cohorts. She has experience applying machine learning methods for enrichment trial designs and for personalized clinical decision making. Dr. Gopalakrishnan also possesses experience in drug development strategy and is currently involved in several drug development projects including the development of artificial blood products and medical countermeasures. She has authored more than 60 peer- reviewed publications and is the recipient of American College of Clinical Pharmacy's Best teacher award in 2018. She is also the program director for the online master's program in Pharmacometrics at UMB. She obtained her master's in pharmacy from Birla Institute of Technology and Science, Pilani, India and her Ph.D. in statistics from University of Maryland, Baltimore County.

Dr. Allison Dunn is a Research Assistant Professor at the University of Maryland School of Pharmacy, specializing in the utilization of real-world evidence to inform clinical decision- making and facilitate drug development. With a background in pharmacy practice and pharmacometric modeling, Dr. Dunn aims to bridge the gap between translational research and clinical implementation. Dr. Dunn holds a dual PharmD/MS in Pharmacometrics degree from the University of Maryland School of Pharmacy, where she also completed a post-doctoral fellowship with the Center for Translational Medicine. Her work focuses on using modeling and simulation to support clinical decisions in understudied populations, particularly pediatric and elderly patients. Notable achievements include being awarded grants to leverage AI/ML methodologies to inform digoxin dosing and monitoring strategies in older adults and serving as Principal Investigator on industry projects aimed at optimizing drug development efforts. These endeavors include proving evidence of effectiveness in the face of extensive non- compliance, comprehensive characterization of exposure-response for optimal endpoint selection, and supporting regulatory efforts throughout the drug development life cycle. With memberships in prestigious organizations such as the International Society of Pharmacometrics and the American Society of Clinical Pharmacology and Therapeutics, Dr. Dunn is committed to advancing precision medicine through innovative research endeavors.

Tushar Nitave holds a master's in computer science from Illinois Institute of Technology, with specialization in AI and machine learning. Currently making significant strides at Vivpro Corporation, Mr. Nitave is dedicated to integrating advanced technological solutions into drug development processes. He is a key engineer in designing AI-enabled pharmaceutical regulatory intelligence software. Mr. Nitave will be instrumental in teaching Python programming language to students.

2. **Demonstrate how the institution will provide ongoing pedagogy training for faculty in evidenced-based best practices**

   Opportunities to improve teaching and learning in the program will be identified through a program assessment process as described in Section M. UMB's instructional design team will provide instructional training resources, support, and consultations to faculty involved with the proposed program.

   Faculty teaching in this program will have access to the instructional design team available on campus to incorporate best practices when teaching in the online environment.

J. Adequacy of Library Resources

UMB's Health Sciences and Human Services Library (HS/HSL) is an excellent resource for faculty and students. The library carries a wide range of digital resources including electronic books, journals, and databases that support academic instruction, and an extensive collection of online interactive resources designed to enhance information literacy. Regular in-person and online training are available in a variety of library-related topics including, but not limited to database use, citation management, effective written communication, and research data management.

Faculty librarians provide extensive expertise supporting instruction, research, and scholarly communication through embedded instruction and personalized research consultations. The School of Pharmacy is assigned a research education and outreach librarian to support academic and research activities, who will provide support to the MS in Artificial Intelligence for Drug Development program. During the program, students will complete a variety of projects and presentations that require the review and interpretation of literature, requiring access to resources and personnel from a distance. The HS/HSL maintains proxy services to provide seamless access to electronic books, online journals, and databases from any location. Online course reserves provide an added mechanism to provide limited access to copyrighted materials licensed for instruction without requiring physical access to materials. To ensure students have the same access to personnel resources during the program, all consultation services are available both on campus and online. The program is to be implemented within existing institutional resources.

The Priddy Library at the Universities at Shady Grove (USG) provides similar workshops, training, and consultation opportunities for students on-campus. Librarians from UMB and USG regularly consult to coordinate resources and access needed to ensure students are fully supported in their academic programs at the Universities at Shady Grove.

K. Adequacy of physical facilities, infrastructure and instructional equipment

The physical facilities, infrastructure, and instructional equipment at the School of Pharmacy are adequate to initiate this program, which will leverage existing distance learning instructional technologies to support program management and curriculum delivery. Enterprise technologies supporting student information management (e.g., Ellucian Banner), Blackboard Learning Management System, and web conferencing technologies (e.g., Blackboard Collaborate and Webex) are supported collaboratively with infrastructure support provided by UMB's Center for Information Technology Services (CITS), School of Pharmacy, and School of Graduate Studies.

Infrastructure and physical facilities within the School of Pharmacy allow course faculty to create and deliver core curriculum elements from existing offices, classrooms, and dedicated studio production space. Faculty and administrative staff computers are configured to conduct web conferences and personal recordings as needed to support the delivery of courses and academic advising. For more advanced audio-visual production needs, the school houses a state-of-the-art production studio. Additional audio-visual studio space is available in the Health Science and Human Services Library for faculty and students to produce on-camera presentations. Facilities and services at the Universities at Shady Grove provide similar capabilities offering state-of-the-art classroom and meeting facilities. Faculty offices and meeting space replicate functionality at Baltimore-based facilities.

Technology application support is available through existing helpdesks and instructional design/technology staff during operating hours at UMB and USG. Additional 24/7 support is available for web conferencing technologies through existing agreements with vendors for faculty, staff, and students. Information technology staff on both campuses coordinate regularly to ensure continuity of service and infrastructure support. In addition, the Faculty Center for Teaching and Learning (FCTL) established in 2019, facilitates evidence-based teaching, learning, and evaluation practices throughout the UMB community. As a central resource for all UMB schools, the center provides support and resources for faculty to enhance their teaching and improve student learning outcomes. The center offers consultations, course design, professional coaching, and media production services, and facilitates the multidisciplinary Graduate Teaching Assistant (GTA) and Online Teaching Community (OTC) programs. The FCTL is a thriving hub of teaching excellence, offering a wide range of programs, services, and resources, and actively contributing to the scholarship of teaching and learning.

L. Adequacy of Financial Resources with Documentation

The program will be implemented within existing institutional resources. New tuition revenues coupled with reallocation of existing funds supporting the Doctor of Pharmacy Program will support the new MS in Artificial Intelligence for Drug Development Program. Fund balance will be used for one-time costs in the first year.

MHEC FORM - Artificial Intelligence for Drug Development					
Resource Categories (Note "Resources", not "Revenue")	Year 1	Year 2	Year 3	Year 4	Year 5
1. Reallocated Funds	$273,856	0	0	0	0
2. Tuition/Fee Revenue (c + g)	$470,652	$941,304	$907,686	$907,686	$907,686
a. Number of F/T Students	0	0	0	0	0
b. Annual Tuition/Fee Rate (15*Credit Hour Rate)	$16,809	$16,809	$16,809	$16,809	$16,809
c. Total F/T Revenue (a x b)	$0	$0	$0	$0	$0
d. Number of P/T Students	28	56	54	54	54
e. Credit Hour Rate	$1,121	$1,121	$1,121	$1,121	$1,121
f. Annual credit hours per P/T student	15	15	15	15	15
g. Total P/T Revenue (d x e x f)	$470,652	$941,304	$907,686	$907,686	$907,686
3. Grants, Contracts & Other External Sources (a + b + c)	$0	$0	$0	$0	$0
a. Grants	$0	$0	$0	$0	$0
b. Contracts	$0	$0	$0	$0	$0
c. Other External Sources	$0	$0	$0	$0	$0
TOTAL RESOURCES (ADD 1 - 3)	$744,508.00	$941,304.00	$907,686.00	$907,686.00	$907,686.00

The unique nature of the program requires 4 FTE faculty and support staff. Ongoing expenditures include library support (curating references and materials not currently in the library), instructional design and instructional technology delivery costs, marketing and recruitment (including travel), assessment, proctors, guest lecturers and IT/software costs. There will also be a periodic need to utilize external consultants to evaluate and update the curriculum over time.

The proforma financial statement assumes tuition rates comparable to our MS Pharmacometrics Program. The program is fairly complex and will require instructional design, marketing, educational technology support, IT support, high amounts of cloud computing and cutting-edge faculty to deliver the program. The school will also incur assessment costs in keeping with its evaluation of the effectiveness of all of its programs.

Expenditure Categories	Year 1	Year 2	Year 3	Year 4	Year 5
1. Faculty Expenditures (e + f)	**$586,040**	**$586,040**	**$586,040**	**$586,040**	**$586,040**
a. Faculty Program Director (Internal)	$10,000	$10,000	$10,000	$10,000	$10,000
b. Initial Course Development (External)	$0	$0	$0	$0	$0
c. Reallocated Faculty Salaries (Internal)	$445,000	$445,000	$445,000	$445,000	$445,000
d. Adjunct Faculty (External)	$0	$0	$0	$0	$0
e. Total Faculty Salaries	$455,000	$455,000	$455,000	$455,000	$455,000
f. Total Benefits (26.1% internal, 8.5% external)	$131,040	$131,040	$131,040	$131,040	$131,040
2. Administrative Expenditures (b + c below)	**$52,618**	**$116,928**	**$116,928**	**$116,928**	**$116,928**
a. # FTE	0.9	2	2	2	2
b. Total Salary (see list)	$37,800	$84,000	$84,000	$84,000	$84,000
c. Total Benefits (39.6%)	$14,818	$32,928	$32,928	$32,928	$32,928
3. Equipment (AV replc.)	**$17,500**	**$57,500**	**$45,512**	**$45,512**	**$45,512**
a. Technology (equipment, licensing, etc.)	$10,000	$50,000	$25,512	$25,512	$25,512
b. Educational Technology Allocation	$7,500	$7,500	$20,000	$20,000	$20,000
4. Library	**$0**	**$25,125**	**$25,125**	**$25,125**	**$25,125**
5. New or Renovated Space	**$0**	**$0**	**$0**	**$0**	**$0**
6. Other Expenses	**$88,350**	**$155,711**	**$134,081**	**$134,081**	**$134,081**
a. Direct Program Expenses	$10,000	$40,711	$50,000	$50,000	$50,000
b. IT & Secure Resch Environment System	$7,500	$25,000	$38,000	$38,000	$38,000
c. Marketing Costs, Ed Technology & Assessment	$70,850	$90,000	$46,081	$46,081	$46,081
7. Contingency Funding	**$0**	**$0**	**$0**	**$0**	**$0**
TOTAL EXPENDITURES (ADD 1 - 7)	**$744,508**	**$941,304**	**$907,686**	**$907,686**	**$907,686**

Table 2: Program Expenditures

M. Adequacy of Provisions for Evaluation of Program

Extensive curricular mapping has been completed to assure each terminal performance objective in Appendix A is introduced, emphasized, and reinforced through required and elective coursework. Successful completion of coursework will demonstrate student achievement of performance objectives. Best practices will be emphasized with liberal use of examples, how to operationalize these techniques, and how to assess success. Faculty will be instructed on "Standards from the QM [Quality Matters] Higher Education Rubric, Sixth Edition" including the eight standards, which cover 42 elements of assessment for an online course. An Assessment Committee will review each online course annually using this rubric to assure quality. If necessary, a corrective plan will be provided by the Assessment Committee to the Program Director. Faculty will be provided with educational programs to continue their development as online educators.

Student retention for the MS in Artificial Intelligence for Drug Development will be tracked. Both student and faculty satisfaction will be assessed after each course.

N. Consistency with the State's Minority Student Achievement Goals

The University of Maryland, Baltimore enjoys robust cultural diversity and minority student enrollment in all academic programs. Specifically, in 2015, 43.4% of all master's level candidates were minority students and 42.4% of students enrolled in professional practice doctorate programs were of minority status. Our university strives to make students of all cultures feel welcome, and they thrive accordingly. As stated above, per the mission statement, the University of Maryland, Baltimore "explicitly values civility, diversity, collaboration, teamwork, and accountability."

The proposed MS in Artificial Intelligence for Drug Development program aims to address both UMB and the state's cultural diversity goals. The program's online delivery aims to enhance minority student access and success. Distance education uses technology to expand access and promote success for learners from diverse communities, and the flexibility inherent in online instruction meets the diverse needs of learners.

Recruitment for the MS in in Artificial Intelligence for Drug Development will include advertising and targeted recruitment to top health professional programs for African Americans (http://www.bestcollegesforblacks.com/HEALTHPROFESSIONS.html).

O. Relationship to Low Productivity Programs Identified by the Commission

The proposed MS in AI for Drug Development is not directly related to any identified low productivity program.

P. Adequacy of Distance Education Programs

This is an online program using Blackboard as the learning management system (LMS). Upon admission to the program, all students will be assigned to an academic advisor. All course materials will be posted in the LMS and include pre-recorded lectures, pre-recorded video interviews with experts in the field, readings, discussion boards, and links to interactive computer-based exercises. Students will have the

opportunity to participate in live, in-person sessions, as well as web conferencing, and online active-learning instruction both independently and in groups.

Many proposed program faculty have extensive teaching experience in distance education, and continued training and support will be provided to all faculty. The program will employ existing technology to produce and deliver pre-recorded lectures (e.g., recording studio), to conduct web conferences (e.g., Blackboard Collaborate) and to design and deliver active-learning instructional activities. The School of Pharmacy has been using distance education technology to deliver our PharmD program at USG for more than 10 years, and for four highly successful master's programs for more than seven years.

Performance objectives were developed, and the curriculum was designed to achieve learning outcomes via distance education modalities. Curricular mapping was structured to ensure that each terminal performance objective is introduced in one of the first four courses. Each terminal performance objective is then emphasized in one or more of the elective courses, and all objectives are reinforced in the final two required courses. The choice of electives and specialized tracks allows for self-determined learning as planned by each participant. The program will combine synchronous and asynchronous online learning, providing students with multiple opportunities for interaction with faculty. We anticipate that this program will attract students from myriad disciplines, and our faculty will also represent multiple areas of expertise in the basic and clinical sciences, policy, and administration.

All faculty teaching in this program will satisfactorily complete a training program on distance education provided by UMB's School of Graduate Studies. The faculty will collaborate and utilize the resources at the University of Maryland Faculty Center of Teaching and Learning (FCTL). The FCTL supports the UMB mission through specific efforts to sustain educational excellence, and it contributes to the UMB mission in all areas, supporting: student success, research and scholarship, educational inclusivity and diversity, assessment and efficiency, and collaboration. The FCTL partners with faculty, staff, and administrators in the curation, collaboration, and co-creation of teaching and learning resources for educational enhancement and student success. Education specialists, instructional system designers, and instructional technologists from FCTL will be working hand-in-hand with faculty to develop learning activities.

Course development will be accomplished in partnership with a program director, teaching faculty, and the instructional design team, who will ensure course materials follow best practices in online education and adult learning theory. Collectively, they will produce the following materials:

- Course-level outcomes and module level objectives
- Course syllabi and student guides that outline objectives, discussion prompts and learning activities, and resources (articles, websites, online videos)
- Assignments and assessments that measure student performance, and clear instructions for completing them
- Grading rubrics

Appendix A. Terminal Performance Objectives and Curricular Map

Course	601	602	603	604	605	606	607	758	Course:	
TPO#									**MSMC**	
1	I			I	E	E		R	AIDD 601	Introduction to Drug Development
2	I	I	I		E	E		R	AIDD 602	AI Methodology I
3				I	E	E	E	R	AIDD 603	AI Methodology II
4		I	I					R	AIDD 604	Drug Development Strategy
5		I						R	AIDD 605	Pharmacovigilance
6				I			E	R	AIDD 606	Precision Medicine
7	I							R	AIDD 607	Optimizing Clinical Research
8	I					E		R	PHAR 758	Special Topics
9							E	R		
		I = introduced; E = emphasized; R = reinforced								

TPOs:

1. Apply knowledge of drug development to identify key processes and decisions when developing a new treatment.

2. Apply concepts of AI/ML to real-world problems pertaining to drug development.

3. Develop monitoring plans to determine safety monitoring post-approval.

4. Apply Large Language Models (LLMs) to access key regulatory intelligence to inform development strategy.

5. Apply knowledge of AI/ML to advance precision medicine.

6. Identify key advances in AI/ML in the healthcare space.

7. Participate in health policy decision-making processes by evaluating primary literature to assist policy makers and prescribers in making well-informed decisions about AI/ML in patient care.

8. Identify areas for future research related to enrichment of clinical trials to accelerate clinical testing and protecting patients from unnecessary testing.

9. Demonstrate a commitment to excellence through continuing professional development and the education and training of data scientists, healthcare professionals, regulatory bodies, and other relevant stakeholders.

UNIVERSITY SYSTEM
of MARYLAND

TOPIC: Bowie State University proposal for a Bachelor of Science (BS) in Immersive Media, Entertainment, and Gaming

COMMITTEE: Education Policy and Student Life and Safety

DATE OF COMMITTEE MEETING: December 3, 2024

SUMMARY: The BS in Immersive Media, Entertainment, and Gaming (IMEG) at Bowie State University (BSU) will provide collaborative and interdisciplinary experiences between the Departments of Fine and Performing Arts and Computer Science in the areas of game design, XR, and virtual production and in the visual and media arts through iterative cycles of design, problem-solving, and analysis. The program is designed to prepare students for employment in technical and creative positions in the game and entertainment industries while emphasizing fundamentals such as entrepreneurship, diversity, technology, and inclusion by merging these areas and unique partnerships between these departments at Maryland's oldest HBCU. The program will equip students and graduates with the skills and knowledge to apply computing, modeling, and simulation techniques, and digital media arts (art, animation, interactive, video, sound) and virtual production for entertainment, film, immersive experiences, research, education, military, sports, and other disciplines.

   This program's innovation lies in its multi-disciplined approach to increasing diversity, inclusion, and representation of women, minorities, and underserved communities; encouraging entrepreneurship in the burgeoning gaming and entertainment industry; and preparing students for lucrative careers. According to GlassDoor, average salaries in immersive media range from $70,000 to $140,000 annually in positions such as junior web developer, digital designer, and a host of other positions.

ALTERNATIVE(S): The Regents may not approve the program or may request further information.

FISCAL IMPACT: No additional funds are required. The program can be supported by the projected tuition and fee revenue.

CHANCELLOR'S RECOMMENDATION: That the Education Policy and Student Life and Safety Committee recommend that the Board of Regents approve the BSU proposal for a BS in Immersive Media, Entertainment, and Gaming.

COMMITTEE RECOMMENDATION:	DATE: December 3, 2024
BOARD ACTION:	DATE:
SUBMITTED BY: Alison M. Wrynn 301-445-1992	awrynn@usmd.edu

Aminta H. Breaux, Ph.D.

President

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August 15, 2024

Jay A. Perman, MD
Chancellor
University System of Maryland
3300 Metzerott Road
Adelphi, Maryland 20783-1690

RE: New Academic Program – Bachelor of Science –Immersive Media, Entertainment, and Gaming

Dear Chancellor Perman:

Please find enclosed a proposal to offer the Bachelor of Science –Immersive Media, Entertainment, and Gaming (HEGIS 109901/CIP 50.0411).

Gaming and entertainment arts requires knowledge of computer programming, research, advanced mathematics, media arts, animation, design, film, production and physics as well as artificial intelligence, immersive technology, and game engines that make up the game programs. The proposed B.S. in Immersive Media, Entertainment, and Gaming will provide collaborative and interdisciplinary experiences in computer science, XR animation and in the visual and media arts; and through iterative cycles of design, problem-solving and analysis will also be a formal research component and strategic partnership between the departments of Fine and Performing Arts (VCDMA program) and Computer Science within the College of Arts and Sciences. The program will equip students and graduates with the skills and knowledge to apply computing, modeling, and simulation techniques, and digital media arts (art, animation, interactive, virtual, video, sound) and production for entertainment, immersive experiences, research, education, military, sports, and other disciplines.

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

Sincerely,

Aminta H. Breaux, Ph.D.

cc: Dr. Guy-Alain Amoussou, Provost and Vice President for Academic Affairs
       Dr. Candace Caraco, Associate Vice Chancellor for Academic Affairs, USM
       Dr. Jacqueline M. Cade, Manager of Institutional and Academic Programming

UNIVERSITY SYSTEM OF MARYLAND INSTITUTION PROPOSAL FOR

X	New Instructional Program
___	Substantial Expansion/Major Modification
___	Cooperative Degree Program
X	Within Existing Resources, or
___	Requiring New Resources

Bowie State University

Institution Submitting Proposal

Immersive Media, Entertainment, and Gaming

Title of Proposed Program

Bachelor of Science	**Spring 2024**
Award to be Offered	Projected Implementation Date

1099.01	50.0411
Proposed HEGIS Code	Proposed CIP Code

Fine and Performing Arts/ Computer Science	Prof. Tewodross Williams
Department in which program will be located	Department Contact

301-860-3751	tmelchishua@bowiestate.edu
Contact Phone Number	Contact E-Mail Address

Signature of President or Designee

8-12-24

Date

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.

The Department of Fine and Performing Arts proposes a new Bachelor of Science (BS) degree in Immersive Media, Entertainment and Gaming (IMEG) in collaboration with the Department of Computer Science. This exciting and interdisciplinary program provides much-needed talent for the growing technical and creative positions pipeline in the game, XR, entertainment, and workforce training for companies. As Maryland's oldest HBCU/HBI located in Prince George's County, MD, BSU is uniquely positioned to offer such an innovative and collaborative program. The university is very close to the burgeoning metropolitan areas of Washington, DC, Baltimore, and Annapolis, MD. The proposed degrees between the Departmentof Computer of Science (CS) and the Department of Fine and Performing Arts (DFPA), Visual Communication and Digital Media Arts program (VCDMA), will equip students and graduates will equip students and graduates with the skills and knowledge to apply gaming, computing, modeling, and techniques for immersive media arts (art, animation, video, sound), game production, entertainment and the metaverse.[1]

The DFPA and CS will continue to focus on enhancing and building its courses, curriculum, and capacity and emphasis on animation and motion graphics and, of course, incorporating more immersive media (XR) courses and skills for our graduates. XR is an umbrella term that encompasses augmented reality (AR), mixed reality (MR), virtual reality (VR), and other forms of alternate, expanded, or immersive reality applications. This new major builds on and applies expertise in computing, visual and media arts, and design to create engaging and immersive gaming systems and experiences. The innovation of this program lies in our goal to increase diversity, inclusion, and representation of women, minorities, and underserved communities and encourage entrepreneurship. The strategic partnership lies primarily between the two departments; however, it may include others in the College of Arts and Sciences, College of Business, and the Entrepreneurship Academy. The collaborative nature of the new degree and shared experiences between faculty and students of both departments will also greatly enhance the effectiveness of this degree. This program will allow for a high level of creative and technical research and production outside of traditional class structures. Graduates may also continue to a terminal degree in Computer Science, Gaming, Visual Arts, Design, and related majors in digital media, immersive media (XR), and production. The program will equip students and graduates with the skills and knowledge to apply computing, modeling, and simulation techniques, media arts (art, design, animation, video, sound, motion capture), and virtual production for entertainment, research, education, military, sports, and other disciplines.

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[1] https://about.meta.com/immersive-learning/?gclid=Cj0KCQjwteOaBhDuARIsADBqReiIYNUI-
1z7WJQ_q0V1MBz1OkWuQexeFpPf6tv9arzqK6hyhW4v2ywaAhUyEALw_wcB&gclsrc=aw.ds

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

The new majors will respond to the following institutional goals (based on BSU's Strategic Plan):

Goal 1: Achieve Academic Excellence Supported by Curricular as well as Co-curricular Experiences, Goal 2: Promote a Holistic and Coordinated Approach to Student Success, Goal 3: Encourage Academic Innovation to Meet Student Needs, Goal 4 - Enhance our campus culture of diversity, inclusion, and civic engagement; and Goal 5: Ensure Long-term Viability of BSU

The two, new majors would respond to the following institutional goals (based on BSU's Strategic Plan) [2]:   *Goal 1: Achieve Academic Excellence Supported by Curricular as well as Co-curricular Experiences Goal 2: Promote a Holistic and Coordinated Approach to Student Success, Goal 3: Encourage Academic Innovation to Meet Student Needs and Goal 5: Ensure Long-term Viability of BSU*

The proposed new degrees would also contribute to the university's strategic goals (1, 2, 3, 4, and 5) as follows:

Goal 1—Achieve academic excellence supported by curricular and co-curricular experiences: The two new Bachelor of Science degrees would also contribute to the achievement of Bowie's 2019 – 2024 Racing to Excellence Strategic Plan, specifically *Goal 1 Academic Excellence, Objective 1.1 High-demand, innovative academic programs.*

Goal 2—Promote a holistic and coordinated approach to student success: The new BS degreesconsist of components from various disciplines and utilize an approach designed to create a well-rounded student.

Goal 4 - Enhance our campus culture of diversity, inclusion, and civic engagement: BSU is among the top five universities in Maryland that graduates African Americans with bachelor's degrees in nursing, biology, and computer/information sciences (*Diverse: Issues in Higher Education*).[3] The university is committed to providing opportunities to traditionally underrepresented populations in the gaming, entertainment, and STEM/STEAM fields. The new BS degrees will empower "a diverse population of students to reach their potential, by providing innovative academic programs" and by supporting Maryland's workforce and economy.

Goal 5 - Ensure the long-term viability of Bowie State University (BSU): The current high demand for Game Developers, Animators, XR, and Game Designers will attract many students, which in turn will enhance the viability of BSU. The demand for graduates in this field is anticipated to increase and grow. According to Linked In, "Extended Reality will pivot with predictions that the industry will reach a total of US billion in 2024, or a 54% annual growth rate between 2020 and 2024. XR (augmented reality, virtual reality and mixed reality) is one of the fastest-growing industries that are changing our world in dramatic ways. It is a new way to teach,

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[2] https://bowiestate.edu/about/administration-and-governance/office-of-the-president/reports/bsu-strategic-plan-fy19-fy24.pdf
[3] https://bowiestate.edu/about/news/2019/diverse-issues-ranks-bsu-as-top-100-producer-of-minority-degrees.php

train, communicate and connect with customers…"[4]

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 funding of the program will come from tuition and course fees for the first five years. The two departments will fund the programs through existing resources and budgets. Additional funding would be further supported through possible grants, partnerships, and research opportunities with related companies, organizations, agencies, and game design, XR, and entertainment industries. The programs rely on existing Computer Science, VCDMA (Fine Arts), and related courses and will require limited new expertise beyond current faculty resources. We will use existing courses from among the programs and will create only a few new courses to support this program. The Departments of Computer Science and Fine and PerformingArts (VCDMA) have partnerships, collaborations, and MOUs with government agencies, studios, and the game design, XR, and entertainment industry. We will leverage the existing partnerships with industry partners to bring real-world experience to the classroom and provide extracurricular learning opportunities. For example, VCDMA has a partnership with Laika Animation Studios as well as MOUs with television and film studios and with local arts, and filmorganizations such as A + E Networks, Megamind Media, Octet Productions, and the Prince George's Arts and Humanities Council (PG Film Office).[5] These strategic partnerships will further create pathways and a pipeline into the professional animation, film, and entertainment industry. Course projections will be monitored annually, and over time, increased demand for courses could necessitate acquiring additional full-time faculty. A request for new faculty will bemade to the university administration if the need arises.

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

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

BSU has demonstrated its unwavering commitment to technology-related programs. The administration supported the ABET accreditation of the Computer Science program, which involved a four-year preparatory period followed by another year of study and campus visit by ABET to earn the credential. The administration supports the same process for the planned BS degrees in Virtual Reality (CS); and BS in Immersive Media, Production and (DFPA), and especially as the VCDMA and this major will seek accreditation from the National Association of Schools of Art and Design (NASAD)[6] in 2023. The university's policy is to support program growth by providing funds to hire new faculty, support the development of new courses, and provide additional library resources. Both programs will receive similar support from the university administration. The four computer labs located in the Thurgood Marshall Library support all technology-related classroom instruction and currently have sufficient capacity to simultaneously support most of the new courses proposed for the new BS degrees and programs. The CS department also has several labs which the students use. In addition to these campus labs, the university has also approved the acquisition of access to cloud-based laboratory resources, providing students with state-of-the-art computing resources. The Fine and Performing Arts Center (DFPA) has (2) computer and digital media arts labs, artists' studios; stop-motion animation studio, video edit suite, film production equipment and facilities to support animation, film, media arts production; sound design, music technology, lab, recording studio and much more.

b. Continuation of the program for a period sufficient to allow enrolled students to complete the program.

Given the established nature of the computer science degree and fine arts programs, the proposed degrees will be able to manage the incremental resource needs by leveraging the existing curriculum and laboratory infrastructure. With each new year of the new degree offering, only those required for the initial student class will need to be added. Thus, only new freshman classes will be added to the class offerings in the first year of the program. In the second year, the freshman classes will be repeated, and sophomore-level courses will be added. This incremental increase in curricular offerings requires only a gradual increase in expenditure, to which the administration has committed. If at any point, after the full program is launched, the university decides to discontinue the degree program, no new students will be admitted to the program. Currently, enrolled students will be provided with the required classes to complete their degrees.

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 need for innovative curriculum instruction continues to grow with demands from the marketplace to provide an employable, skilled workforce that can assume new roles of productivity, responsibility, and leadership. Bowie State University, as a HBCU provides support to the postsecondary education goals set forth in the 2013-2017 Maryland State Plan for Postsecondary Education. The proposed BS degrees at Bowie State University (BSU) advance the education and the knowledge of design, art, and technology for immersive game design. It provides training in transferable skills and practice for training and preparing a local workforce that will contribute to and participate in many current and future aspects of economic development in the State of Maryland. The market for immersive gaming continues to grow. In November 2019, the revenue in the United States for the video game industry amounted to approximately 2.25 billion U.S. dollars. As the 2020 publication "Essential Facts About the Game Design Industry" by the Entertainment Software Association (ESA), the author mentions that players of all ages and backgrounds embrace video games. There are more than 214 million video game players across the United States, three quarters of all U.S. households have at least one person who plays video games, and 64 percent of U.S. adults and 70 percent of those under 18 regularly play video games. As a computer science degree, the development of a game is only of marginal scope.[4] It requires additional STEM/STEAM interdisciplinary collaboration with the Department of Computer Science and as supported by the Department of Fine and Performing Arts such as animation, design, sound/music, storytelling, and production. Other discipline areas could include writing, business, marketing, communications, and entrepreneurship.

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

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[4] https://www.theesa.com/resource/2020-essential-facts/

The programs focus primarily on the science, algorithms, concepts, and theory behind computer games and the virtual reality of scientific phenomena. It introduces students, primarily those who are African American as well as other minorities and underrepresented groups to graphic visualization, artificial intelligence, machine learning, human-computer interaction, animation, sound, and immersion. Students at an HBCU such as BSU will further research the socioeconomic, political, and cultural considerations and impact of these new experiences and vice versa as they also learn to conduct themselves as ethical professionals and creatives while further deepening their understanding of XR/AR/VR digital media, design thinking, operating systems, information security, and object-oriented programming.

Table 1: Race/Ethnicity Completion of Degrees within CIP Codes Maryland Region

Race/Ethnicity	Percent of Completions Within CIP Codes	Percent of Completions All CIP Codes
White	37%	49%
Black or African American	22%	21%
Asian	11%	10%
Hispanic or Latino	8%	8%
Two or more races	6%	4%
Race/ethnicity unknown	3%	3%
Nonresident alien	15%	4%
Native Hawaiian or Other Pacific Islander	0%	0%
American Indian or Alaska Native	0%	0%

Source: Aslanian Market Research Education Dynamics for Bowie State University (Page 6– March 2021)

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

Bowie State University recruitment strategies actively seek a diverse student population from Maryland and beyond who will add diverse insights and experiences to the program and the game industry. This program will contribute to the economic growth and vitality of the state by providing new knowledge, skills, and abilities to contribute to, and advance, the workforce in game design. Major companies and organizations are seeking greater diversity and inclusion and especially in the gaming and entertainment industry where they will often face challenges related to diversity, inclusion, ethics, and hands-on skills. The implementation of this new degree can be a catalyst to assist BSU in meeting its strategic goals to achieve academic excellence supported by curricular and co-curricular experiences. The distinction is the emphasis on XR and immersive media and production and the collaboration with Computer Science and their proposal for game development and virtual reality.

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

The Maryland State Plan for Postsecondary Education has three basic tenets: **Access, Success, and Innovation.**

<u>**Access:**</u> BSU provides opportunities for many underrepresented Maryland residents to obtain a college education at affordable cost. The new BS degrees and program will provide an avenue for underrepresented students to enter the high demand fields of Gaming, Animation and XR production as well as in the entertainment industry.

<u>**Success:**</u> Students entering either program at BSU will have access to affordable education, mentoring by a caring faculty, quality advising, and a nurturing environment that will help ensure their success in the program.

<u>**Innovation:**</u> Students in the program will be involved with research projects with faculty mentors and industry partners. This exposure to research and innovative techniques under the guidance of academic and game design, animation, XR, and entertainment industry experts will continue to help hone students' creativity and develop the networking skills students need to become successful entrepreneurs. The new degrees address the state's perceived need for postsecondary education that enhances the quality and effectiveness of its offerings, provides service to and advances diversity in the fields of entertainment and training, and contributes to workforce development and economic growth in Maryland, as addressed in the Maryland Ready 2013-17 Maryland StatePlan. Bowie State University's Departments of Fine Arts and Computer Science have establisheda record of high-caliber undergraduate education in computer science and visual communication, advertising design, digital media, animation and motion graphics, digital cinema (filmmaking), and fashion design.

C. Quantifiable and Reliable Evidence and Documentation of Market Supply and Demand in the Region and State.

1.Describe potential industry or industries, employment opportunities, and expected level of entry (ex: mid-level management) for graduates of the proposed program.

The current outlook for skilled positions in video game design and related professional support is reported by O*NET and the U.S. Bureau of Labor Statistics' Occupational Outlook Handbook, and in the section, *Special Effects Artists and Animators*.[5] According to this information, video game design and related computer occupations are expectedto grow rapidly in the State of Maryland from the 2018 reported employment of 1,840 to the 2028 projected employment of 2,140—a 16 percent projected increase.[6] Game design is a vital and growing field, with high demand in the District of Columbia, Maryland, and Virginia (DMV)region. A market survey and report (Education Dynamics Gaming Report) on game design in Maryland were conducted on behalf of Bowie State University by Aslanian Market Research/Education Dynamics in March 2021 and are included in this proposal.

Number of Annual Openings in Region

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[5] https://www.bls.gov/ooh/arts-and-design/multimedia-artists-and-animators.htm
[6] https://www.onetonline.org/link/summary/15-1255.01; Valid data are essential to understanding the rapidly changing nature of work and how it impacts the workforce and U.S. economy. From this information, applications are created to facilitate the development and maintenance of a skilled workforce.

In 2019, the region had 6,256 job openings. The leading areas with jobopenings were software developers, software quality assurance analysts, and testers. Other positions include entertainment/recreation managers, designers, and computer programmers.

Table 2: Game Design and Related Occupations in the Maryland Region

Occupations	Annual Openings
Software Developers and Software Quality Assurance Analysts and Testers	3,503
All Other; Entertainment and Recreation Managers, (Except Gambling); and Game Development Studio Managers, All Other	1,498
Graphic Designers	407
Computer Programmers	310
Computer and Information Research Scientists	139
Art Directors	107
Artists and Related Workers, All Other	78
Fine Artists, Including Painters, Sculptors, and Illustrators	75
Special Effects Artists and Animators	56
Designers, All Other	47
Commercial and Industrial Designers	38

Source: Aslanian Market Research Education Dynamics for Bowie State University (Page 16 – March 2021)

The field offers ample job opportunities across multiple industries with strong salary potential, both immediately and over a career in industry and even government. There is also significant potential for developing academic pipeline partnerships with the local game industry, which boasts of over forty-five companies located in the DMV area and nearby areas, such as Hunt Valley, MD.

Table 3: Gaming Careers and Average Salary

Top 5 Gaming Careers:	Annual Average Salary
Games Designer	$66,282 per year
Software Developer & Game Programmer:	$72,000 per year
Special Effects Animator	$77,700 per year
Games Artist	$60,213 per year
Game Play Tester & Quality Assurance	$53,030 per year

Video games have grown to resemble competition-based, interactive movies, and the COVID-19 pandemic has propelled the industry to make more money than movies and North American sports combined. According to Market Watch, "Global videogame revenue is expected to surge 20% to $179.7 billion in 2020, according to IDC data, making the videogame industry a bigger moneymaker than the global movie and North American sports industries combined. The global film industry reached $100 billion in revenue for the first time in 2019, according to the Motion Picture Association, while PwC estimated North American sports would bring in more than $75

billion in 2020."[7]

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

Increasing academic and artistic attention has been paid to the study of games and play. Along with a significant serious study of the cultural, pedagogical, and ethical implications of games, designers and artists are attempting to use the power of games and play to address social,civic, and health issues. Gaming and entertainment arts are now included in immersive simulation and occupation training for medical and military applications. This industry is taking a front-row seat to promote user experience for mental health and wellbeing. The gaming industry continues to grow in designed interactive user experiences in education and occupational training at all levels.

3. Discuss and provide evidence of market surveys that clearly provide quantifiable and reliable data on the educational and training needs and the anticipated number of vacancies expected over the next 5 years.

The two new degrees and programs empower its graduates for entry and advanced positions in the gaming, XR and entertainment industries. According to the Bureau of Labor Statistics, the job outlook for multimedia artists and animators shows a 6 percent growth rate from 2014-2024 with a median salary of $63,970 a year, while software developers can expect 17 percent growth and a median salary of over $100,000 a year.[8]

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

Please refer to Tables 4 and 5.

Table 4: Enrollment Projections and Estimated Growth

Year	2013	2014	2015	2016	2017	2018	2019
Estimated Number of Enrollments	576	630	942	750	666	996	954

Source: Aslanian Market Research Education Dynamics for Bowie State University (March 2021 – Page 10)

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[7] https://www.marketwatch.com/story/videogames-are-a-bigger-industry-than-sports-and-movies-combined-thanks-to-the-pandemic-11608654990
[8] https://www.bls.gov/ooh/arts-and-design/multimedia-artists-and-animators.htm

The following table indicates a steady growth in the number of completed degrees across allbaccalaureate level programs at institutions operating within Maryland.

Table 5: Number of Graduation Completions in Maryland

Year	2013	2014	2015	2016	2017	2018	2019	Percent Change 2013-2019
Numberof Completions	96	105	157	125	111	166	159	67%

Source: Aslanian Market Research Education Dynamics for Bowie State University (March 2021 – Page 9)

D. Reasonableness of Program Duplication:

There are similar academic programs in game design and related disciplines in the geographic region and in the State at public institutions University of Maryland, College Park; University of Maryland, Baltimore County, University of Baltimore (PBI), and University of Maryland Eastern Shore (UMES, and HBCU)), and Maryland Institute College of Art (MICA), but there is no duplication with the proposed new program at Bowie State University when considering factors such as CIP code, mission, student enrollment, geographic location, and proximity to BSU. Of note, during the USM circulation period, BSU received an objection to the proposed program only from University of Baltimore, who after robust discussions determined that the course requirements and the expertise of many of the faculty required to teach the courses in our program were in fact dissimilar, and their concerns were mitigated with a slight differentiation in program title, eliminating the term "game Design" and replacing it with "Gaming." Further, BSU engaged UMES in discussion to review our proposed program and their new Gaming and Software Engineering program to ensure that there was no duplication; UMES found that there was none. In fact, if the IMEG program is approved, BSU and UMES plan to partner to ensure that graduates of our IMEG can further their studies and careers in graduate study at UMES.

Bowie State University's B.S. in Immersive Media, Entertainment and Gaming has a CIP code of 50.0411 (Game and Interactive Media Design), focused on "…design, development, and programming of interactive media entertainment, including computer and video games, virtual environments, internet applications, and other interactive media…" (NCES Classification of Instruction Programs, https://nces.ed.gov/ipeds/cipcode/cipdetail.aspx?y=55&cipid=89301). The program is an arts based program with technical instruction in virtual reality, immersive media, gaming, film and other applications, and once the program is fully established we will seek NASAD accreditation. BSU continues steadfast in its mission as Maryland's oldest HBCU to provide access to higher education to empower students from diverse backgrounds to reach their full potential through innovative academic programs, and to develop students into professionals with a critical-ethical perspective who are socially responsible and can think critically, and

is the only Maryland HBCU in the DC-Southern Maryland-Virginia (DMV) region. We are unique in that we serve a different demographic with an emphasis on African Americans (81% as an HBCU and in the central/southern areas of Maryland, including Prince George's County, MD (DMV area). BSU is home to the Entrepreneurship and Innovation Center, and seeks to develop students with an entrepreneurial mindset to create spaces for themselves and others from diverse backgrounds in all aspects of commerce where they may not exist or provide access. In addition to this unique characteristic of the IMEG program, the distinct classification of instruction codes assigned to each program in and of itself distinguishes each program from the others. The Bowie State University program is a unique undergraduate degree in that the strengths are collaboration, innovation, diversity, entrepreneurship, and inclusion within the partnership and collaboration between the Departments of Fine and Performing Arts and Computer Science. This is further enhanced through strategic partnerships with companies and organizations in the gaming and entertainment industries, and future collaboration with our sister HBCU across the Bridge, UMES.

While **University of Maryland, College Park (UMCP)**'s BA/BS in Immersive Media Design program offers a similar interdisciplinary approach between the arts and computer science, its CIP code (11.0804 Modeling, Virtual Environments and Simulation) describes programs based in "...modeling, applied visual simulation technology, and the application of quantitative analyses to human-computer interaction..." (NCES Classification of Instruction Programs, https://nces.ed.gov/ipeds/cipcode/cipdetail.aspx?y=55&cipid=89326). UMCP, a nationally ranked institution and Maryland's flagship, serves to achieve excellence in teaching, research, and public service within a supportive, respectful and inclusive environment, and "strives to provide exceptional and affordable instruction for Maryland's most promising students, regardless of income" (umd-provost.files.svdcdn.com/production/files/Mission-Vision.pdf?dm=1697679101). BSU and UMCP are about 11 miles apart.

University of Maryland, Baltimore County (UMBC) offers the Bachelor of Arts (B.A.) and Bachelor of Fine Arts (B.F.A.) (50.0702 Fine and Studio Art) with a concentration in Animation and Interactive Media and an interdisciplinary self-directed concentration in Intermedia. Both programs center on "artistic practices of animation, cinema, motion graphics, games and technology" (UMBC 2024-2025 Undergraduate Catalog, https://catalog.umbc.edu/). The University of Baltimore (UBalt) offers the BS in Simulation and Game Design (CIP 10.0304 – Animation, Interactive Technology, Video Graphics and Special Effects), which prepares students to "use computer applications and related visual and sound imaging techniques to manipulate images and information originating as film, video, still photographs, digital copy, soundtracks, and physical objects in order to communicate messages simulating real-world content" (NCES Classification of Instruction Programs, https://nces.ed.gov/ipeds/cipcode/cipdetail.aspx?y=55&cipid=87238). UMBC "is a dynamic public research university integrating teaching, research, and service to benefit the citizens of Maryland" and offers "academically talented students a strong undergraduate liberal arts foundation that prepares them for graduate and professional study, entry into the workforce, and community service and leadership" (https://umbc.edu/leadership/mission-and-vision/). UMBC is about 23 miles from BSU.

University of Baltimore (UBalt)'s nationally acclaimed Bachelor of Science in Simulation

and Game Design (CIP 10.0304 – Graphic Communications, Animation, Interactive Technology, Video Graphics and Special Effects) is the oldest and largest game design program in the State, with 40 graduates last year alone. The program is structured through courses in the Department of Computer Science, preparing students with instruction in applied game design theory, the fundamentals of computer programming, 3-D modeling and animation, usability design, the application of simulation to education and other non-entertainment fields, and design of multiplayer games according to the program's webpage (https://www.ubalt.edu/cas/undergraduate-majors-and-minors/majors/simulation-and-game-design/). Our program is centered on the design, animation, and production of video games and other immersive experiences, products (XR), animation, visual and special effects, and virtual production for film and entertainment industries through arts and technical instruction. *Again, UBalt's original objection was mitigated by a change in the program title.* UBalt's mission is to "career-focused education for aspiring and current professionals, providing the region with highly educated leaders who make distinctive contributions to the broader community" (https://www.ubalt.edu/about-ub/ub-strategic-plan.cfm). UBalt is approximately 28 miles from BSU.

University of Maryland Eastern Shore (UMES) recently approved B.S. Gaming and Software Engineering (CIP 14.0903 - Computer Software Engineering), is an ABET (engineering and technology) accredited program in the School of Business and Technology. The program "prepares individuals to apply scientific and mathematical principles to the design, analysis, verification, validation, implementation, and maintenance of computer software systems using a variety of computer languages" (NCES Classification of Instruction Programs, https://nces.ed.gov/ipeds/cipcode/cipdetail.aspx?y=55&cip=10.03040). The UMES Gaming and Software Engineering program overview states that the program "offers prospective students an academic program with strong foundations in simulation technology and practice to meet the needs of technical professionals, including those in the Eastern Shore of Maryland with more advanced learning in the rapidly developing field of simulation technology and game development." help students develop new technologies in emerging fields related to game development for a wide range of applications, including agriculture, automotive, aerospace, clean energy systems, construction, finance, health care, and hospitality management. The UMES mission is to "be the preeminent public Historically Black University that is recognized for leadership in student-centered education, exceptional research, innovation, and inclusiveness" (https://wwwcp.umes.edu/middlestates/mission-vision-and-core-values/).

Maryland Institute College of Art (MICA)'s B.A. in Game Design (CIP code 50.0411) is listed on the Academic Program Inventory; however, a review of the institution's catalog did not list a major in Game Design. MICA offers a minor (15-credits) in Game Design that prepares students with the "technical and artistic skills necessary to create professional interactive game experiences" and to "develop the ability to create highly compelling interactive environments that can be used across a range of fields - from medicine to museums, education, and entertainment, including the digital and traditional game industries" https://www.mica.edu/undergraduate-majors-minors/game-design-studio-minor/).

In sum, the uniqueness of this proposal is the emphasis not only on game design but also on virtual production, immersive media (XR), and interactive user experiences, as well as

collaboration and interdisciplinary approach between computer science and the fine and performing arts, as well as other departments and disciplines at BSU. We also have an added focus on entrepreneurship with the focus on animation, special and visual effects for the entertainment industry. The curricular content, outcomes and objectives, faculty requirements of the IMEG proposed major are also different from the other institutions as well as employability and job titles as our program does not end with game design and also includes other opportunities for students and graduates in the entertainment industry and specifically with immersive media (XR) and virtual production. UMES and UBalt confirmed that there is no duplication between their programs and our proposed program.

Table 6: Similar Institutions in Maryland and Degree Completions

Institution	Bachelor's Degree Completions (2019)	Game Design Related Degrees
Maryland Institute College of Art	79	Animation Film & Video & Humanistic Studies Game Design General Fine Arts
University of Maryland-Baltimore County	32	Design
Bowie State University	19	Visual Communication & Digital Media Arts
Stevenson University	19	Graphic Design
University of Maryland, Eastern Shore	_	Game Design & Software Engineering (recently approved)
University of Baltimore*	7	Integrated Arts
Capitol Technology University	3	Information Technology
University of Maryland, College Park	-	Immersive Media Design

Source: Aslanian Market Research Education Dynamics for Bowie State University (Page 11 – March 2021)

*As noted in Section D above, University of Baltimore offers the BS.in Simulation and Game Design which graduated 40 students last year. The program is the oldest and the largest in the USM. This program was omitted from the Aslanian Market Research Report referenced in the table above.

2. Provide justification for the proposed program.

Both departments and their various majors have growing recognition in the state and nationally.BSU strives for excellence in every facet of program delivery and has the systems andstructures in place to support achieving these goals. This degree will increase

minorityparticipants in the workforce as well as the connections to the local business sector, federal andstate government agencies, entertainment companies, and venues that use the new major to continue with the university's mission to be a model for academic excellence, innovation, and student success. For example, Hunt Valley and Baltimore, Maryland serve as hubs for several game design companies in the state.[9] Some of these companies include Firaxis, ZeniMax, Big Huge Games, Sparky Pants, and others.[10] The Washington-DC metropolitan area also hosts several animation game design, immersive studios and companies such as that would benefit from this major in terms of graduates such as Bethesda Soft Works, ZeniMax Media and others.[11] Enrolling students in these programs will build strong and ongoing relationships with the faculty and industry advisors who can serve as mentors on the projects, products and thesis.

This new program supports the advancement of diversity and inclusion in the targeted workforce. This program will contribute to the economic growth and vitality of the state by providing new knowledge, skills, and abilities to contribute to, and advance, the workforce in game design. Major companies and organizations are seeking greater diversity and inclusion in the gaming and entertainment industries where they often face challenges related to diversity, inclusion, ethics, and practical skills. The implementation of this new degree can be a catalyst toassist BSU in meeting its mission and strategic goals to achieve academic excellence supported by curricular and co-curricular experiences.

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

1. Discuss the program's potential impact on the implementation or maintenance of highdemand programs at HBIs.

As Maryland's first historically Black institution (HBI/HBCU), Bowie State University is committed to providing access to high-quality higher education to African Americans and otherunderrepresented minorities. The goals established in the University's Racing to Excellence
FY 2019- 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 State University continues to:

Support educational opportunity for Marylanders (Success, Strategy 4).
Engage in a continuous improvement process to ensure that institutional policies and practicessupport student success (Success, Strategy 5).
Provide alternative modalities, new programs, and pedagogies, and streamlined student andacademic support services to facilitate timely degree completion (Success, Strategy 6) (Innovation, Strategy 9).
Integrate high impact practices (HIP) into the student experience, including career advising andplanning into internship experiences (Success, Strategy 7).
Partner with business, government, and other institutions to support workforce development andgraduate readiness (Innovation, Strategy 8).
Expand support for grant participation and research (Innovation, Strategy 10).
Innovate and change management strategies with Bowie State faculty, staff, students, and administrators engaging in and embracing experimentation to better meet the holistic needs ofthe students (Innovation, Strategy 11).

F. Relevance to the Identity of Historically Black Institutions (HBIs)

Bowie State University is a historically Black institution, and this new program does not impact other Maryland HBIs/HBCUs. No other institution of higher education in the state offers this kind of undergraduate program. Bowie State University is compliant with all stipulations of Title VI, Title IX, and Section 504. Furthermore, Bowie State serves an underrepresented minority population, and respect and understanding of diversity is central to its mission of advancing minority student achievement. Accordingly, a student graduating from an HBI/HBCU hopefully will always be concerned about others, especially those who are under-represented and/or marginalized and have great appreciation for the global market and community. The relevance of the proposed degrees is both supported by the marketplaces' need to improve diversity and opportunity across a broad spectrum, to include stories and entertainment production with a cultural sensitivity as the anchor. The goals of this new program are motivated by these high educational aims. It is axiomatic that HBIs/HBCUs have placed an emphasis on elevating persons who have experienced a multitude of disadvantages, including those accruing from the pattern of racial discrimination. Historically, HBIs/HBCUs have stressed the importance of educating both the head and the heart. The adage that we educate the whole person is a cornerstone of such institutions. Currently, there are only (3) three HBCUS in the country with a game design (or related) as a program. The game design industry is underrepresented by African Americans specifically HBCU/HBIs and these institutions include University of Maryland Eastern Shore (MD) and again this institution is in another geographic area of Maryland as compared to Bowie State University; the others are Hampton University (VA) and Johnson C. Smith University (NC).

1. Discuss the program's potential impact on the uniqueness and institutional identities andmissions of HBIs.
The proposed degree seeks to aid in closing the gap between Black students who seek a STEM/STEAM degree and those able to achieve this goal. It will help meet the demand for additional STEM/STEAM programs at HBCUs, support other STEM/STEAM programs on campus, and increase the number of minority gaming/XR developers, animators, and design experts in a geographical area desperate to hire qualified graduates to serve in the field. This degree is positioned to be the only program of its kind offered by an HBCU within a 50-mile Baltimore/Washington, DC metropolitan radius. The degrees also emphasize fundamentals such as entrepreneurship, diversity, inclusion, ethics, and immersive technology. The merging of these areas forms a unique, innovative partnership opportunity to advance the education frontier between the Computer Science and Fine and Performing Arts departments and Bowie State University. The relevance of the proposed degrees is supported by the marketplace's need to improve diversity and opportunity across a broad spectrum, includingstories, images, experiences, and creations from a cultural sensitivity and awareness base. As more images of people of color appear in games, animation, and thorough interactive and immersive experiences (metaverse), students from underrepresented groups will be drawn to the opportunities in this booming industry.

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

willoversee the program.

The computer science and fine and performing arts (VCDMA) faculty and Game Design Advisory Board and consultants[12] designed the proposed degree program according to the MHEC, ABET & NASAD guidelines. These same members will assist with review, assessmentand overseeing the two programs. The development of this program was driven in part by the growing demand by students in the VCDMA and computer science programs and inquiries by potential students. A program coordinator for each degree and in each department will oversee the programs.

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

Program Educational Objectives: Both BS degrees and programs through their respective departments will develop computer scientists, creatives, technicians, and designers who can:

Demonstrate fluency in at least one programming or scripting language used in the production of interactive games and be an expert in at least one game development platform.

Demonstrate elements and principles of art/design, principles of animation, problem-solving and design thinking.

Develop and prototype a successful game, entertainment, and/or XR product and/or experience from concept to completion including but not limited to XR (VR, AR & MR).

Produce productions using motion capture, animation, films, special/visual effects, virtual production, and other innovations in technology in the gaming and entertainment industries.

Apply strategies to the gaming and entertainment industries with an entrepreneurial mindset and emphasis on innovation, collaboration, and diversity.

Student Learning Outcomes: Both BS degrees and programs will develop graduates who will be able to successfully and respective to each degree:

Analyze a complex computing problem and apply principles of computing and other relevant disciplines to identify solutions.**

Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline. **

Communicate effectively in a variety of professional contexts.

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[12] The BSU Game Design proposal consultants included Solomon Jagwe, Film Director, 3D Artist/Animator, Marianne Hayden, Lead Cinematics Animator, Skydance New Media, Alton Glass, Head of immersive Media, GRX Immersive Labs, Christine Marsh, Adjunct Instructor (VCDMA) & Metaverse Platform Co-Founder, VCDMA; Roderick Woodruff, Co-Founder/Instructional Designer, Urban Video Game Academy

Recognize professional responsibilities and make informed judgments in computing

Practice based on legal and ethical principles. * *

Design, implement, and evaluate a computing-based solution to meet a given set ofcomputing requirements in the context of the program's discipline. **

Communicate effectively in a variety of professional contexts.

Recognize professional responsibilities and make informed judgments in computingPractice based on legal and ethical principles. * *

Function effectively as a member or leader of a team engaged in activities appropriate to theprogram's discipline.

Apply computer science theory and software development fundamentals to producecomputing-based solutions. **

Apply principles of visual organization, including the ability to work with visual elements intwo and three-dimensions, color theory and its applications, and drawing. ***

Demonstrate knowledge and skills in the use of basic principles, concepts, tools, techniques,procedures, and technologies sufficient to produce animation art from concept to a finished product that communicates ideas and/or stories to a viewer or to an audience. ***

Demonstrate knowledge of the principles of animation, including its visual, spatial, and sound, motion, and temporal elements and features, and how these elements are combined in thedevelopment of animation art. ***

Utilize the characteristics and capabilities of various animation methods and technologiesin creative and project development contexts (examples include but are not limited to stop motion, traditional animation, 2D Digital, 3D Digital, etc.). ***

Demonstrate knowledge of the history of animation, game design, immersive media, artistic and technological evolution, and an understanding of basic aesthetics, visual communication, andcritical theory.

Collaborate and communicate with all members of teams at multiple stages of animation project development and in associated production processes (examples may include but are notlimited to working with background artists, layout artists, title artists, lighters, riggers, production managers, writers, technicians, etc.).

Analyze and synthesize relevant aspects of human interaction in various contexts (physical, cognitive, cultural, social, political, and economic) and with respect to technologically mediatedcommunication, objects, and environments. ***

Understand the importance of diversity, inclusion and the history, culture, and contributions of African Americans and other underrepresented groups in gaming, entertainment, and relatedindustries.

Produce unique and innovative XR (AR, VR & MR) experiences and products to be used in other industries including but not limited to education, business, health, military, sports, the arts,humanities, and natural sciences, and demonstrate a successful portfolio with examples of research, gaming and/or entertainment products, writing and creative content.

**ABET: Accreditation Board for Engineering and Technology (Computer Science)
*** NASAD: National Association of Schools of Art Design (Fine and Performing Arts,VCDMA)

3. Explain how the institution will:
      a. provides assessment of student achievement of learning outcomes in the program
      b. document student achievement of learning outcomes in the program

Courses and curricula will be reviewed annually for effectiveness via course evaluations, course reviews, and assessments of student work, research, and projects that include senior capstones (products), portfolio reviews, and demonstrations to be reviewed by faculty and an advisory board. This board will consist of industry experts, strategic partners, and university faculty from other institutions. There will also be an extensive and periodic program review of the entire major through external reviewers as well as the College of Arts and Sciences and Academic Affairs. Additionally, there will be periodic program and curriculum reviews by the accrediting bodies such as the Accreditation Board for Engineering and Technology (ABET) and the National Association of Schools of Art and Design (NASAD) to retain membership and demonstrate program success, effectiveness, and accountability.

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

Course and credit hours requirements for the two majors and programs are listed in the tables below. Course descriptions are provided in Appendix A.

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

All students in the two majors and programs are required to take the general education courses listed in Appendix A. These courses are incorporated into each degree and to further strengthen the two programs.

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

Course and credit hours requirements for both BS degree programs are listed in the tables below and appendices A, B and C. Course descriptions are provided in Appendix C.

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

All students in both majors and programs are required to take the general education courses listed in the tables below and incorporated into each concentration to further strengthen the

program.

6. Identify any specialized accreditation or graduate certification requirements for this program and its students. None needed and/or not Applicable.

7. If contracting with another institution or non-collegiate organization, provide a copy of the written contract. Not Applicable

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

The advisement and course scheme sequences as well as requirements, program goals will be provided to potential students at admission events as well as through intensive advisement, mentoring and program administration. Both CS and the DFPA will work with the Advisement Center, Admissions and URM to provide clear course schema and 4 –year plans for graduation. Please see Appendix A.

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 program will use the existing promotion mechanisms in the Department of Computer Science and Department of Fine and Performing Arts and within the overall University. These include the undergraduate course catalog, departmental and university web pages, videos, social media and marketing literature. Additionally, folders with information on the major will be available at the admissions open house events and scholarship meetings. More information is available online:

Computer Science: https://www.bowiestate.edu/academics/colleges/college-of-arts-and-sciences/ departments/computer-science/

Fine and Performing Arts: https://bowiestate.edu/academics/colleges/college-of-arts-and-sciences/ departments/fine-and-performing-arts/ and VCDMA program: https://bowiestate.edu/academics/ colleges/college-of-arts-and-sciences/departments/fine-and-performing-arts/undergraduate programs/vcdma-major/

H. Adequacy of Articulation

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

Bowie State has an articulation agreement from the DFPA with Prince George's Community College. This program will continue to develop other agreements with other community colleges such as UDC, College of Southern Maryland. We seek to attract additional local public-school systems in the region to expand partnerships and develop a pipeline to BSU.

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

Table 9. Computer Science Faculty. The table below catalogs the current full-time, tenure/tenure track faculty members from the Computer Science department who will support the launch of the Virtual Reality & Gaming program. Other part-time faculty are rotated each semester.

Name	Appointment Type & Rank	Terminal Degree	Field	Status	Courses to be taught
Ms. Patricia Hughes	Tenured / Asst Professor	MA-Univ of Wisconsin Madison	Computer Science	Full Time	Programming courses
Dr. Soo Yeon Ji	Tenured / Assoc Professor	Ph.D.-Virginia Commonwealth Univ	Computer Science	Full Time	AI, Discrete Structures
Dr. Darsana Josyula	Tenured / Professor	Ph.D.-Univ of Maryland College Park	Computer Science	Full Time	AI courses
Dr. Jie Yan	Tenured / Professor	Ph.D.- Harbin Institute of Technology	Computer Science	Full Time	Gaming and Virtual Reality courses
Dr. Bo Yang	Tenured / Professor	Ph.D.-Pennsylvania State University	Computer Science	Full Time	All Computer Science courses

Table 10. DFPA Faculty. The table below catalogs the current full-time, tenure/tenure-track, long term contractual faculty members from the Department of Fine and performing Arts (DFPA & VCDMA program). Fifty percent of the courses offered will be taught by full-time faculty. Other courses will be taught by adjuncts. (Highlighted faculty names indicate

specialized expertise in the field.)

Name	Appointment Type & Rank	Terminal Degree	Field	Status	Courses to be taught
Tewodross Melchishua Williams	Tenured / Professor	MFA, Intermedia & Digital Arts, UMBC	VCDMA	Full Time	2D Animation, Stop Motion Animation, Motion Graphics, Film production Cinematography Internship, History of Animation, Visual Culture, Portfolio review and Assessment (I and II); and Senior Thesis Exhibition and Capstone courses
Arthur Vidrine	Assistant Professor	MFA, Fine Arts, School of Visual Arts	Studio Arts (Fine Arts)	Full Time	2D, 3D Design, Art History, Photography
Robert Bartlett	Tenured / Assoc Professor	MFA, Playwriting, Catholic University; MA, English Language, Literature and Culture, Bowie State University	Theatre Arts/ VCDMA	Full Time	History of Animation, Screenwriting

Table 10. DFPA Faculty – cont'd

Name	Appointment Type & Rank	Terminal Degree	Field	Status	Courses to be taught
Ogechi Chieke	Assistant Professor	MFA, Computer Art, School of Visual Arts	VCDMA	Full Time	2D Animation, Cinematography Computer Graphics, Visual Literacy, Visual Communication Design
Amina Hammond	Adjunct Professor	MFA, Web Design, New Media, Academy of Art University	VCDMA	Part Time	Web Design, New Media, Animation and Motion Graphics
Kevin Holder	Adjunct Professor	MFA, Fine Arts, Howard University	VCDMA & Studio Arts (Fine Arts)	Part Time	Computer Graphics, Drawing, Painting
Myron Smith	Adjunct Professor	Master of Design, Illinois Institute of Technology	VCDMA	Part Time	Design History
Dr. Prince Ikegwuono	Adjunct Professor	D.Sc, Doctor of Science (D.Sc.), Information and Interaction Design, University of Baltimore MFA, Animation, Savannah College of Art and Design	VCDMA	Part Time	2D Animation, 3D Animation and Modeling, Stop-Motion Animation XR and Virtual Reality production, Game Design, Multimedia, Motion Graphics
Karla Bussey	Adjunct Professor	MFA, Computer Arts/New Media, Academy of Art University	VCDMA	Part Time	Motion Graphics, 3D Animation, Visual Effects

2. **Demonstrate how the institution will provide ongoing pedagogy training for faculty in evidence-based best practices, including training in:**

   a. **Pedagogy that meets the needs of the students**
   b. **The learning management system**

c. **Evidence-based best practices for distance education if distance education is offered. Bowie State University provides:**

- Continuous training for faculty in all departments relative to the Blackboard learning management system (virtual, hybrid, hyflex and in-person) and various modalities.
- Teaching best practices (for both classroom and online courses).
- Other tools, resources, and techniques to support course delivery.
- Through CETL workshops, Faculty Institute, Assessment and Course Development Coordinators, etc.

Additionally, the University supports faculty member involvement in discipline-specific professional memberships, which provide access to best practices in teaching subject matter. Faculty evaluations include how individual faculty members avail themselves of the available resources and implement improvements in their courses. Continuous faculty improvement also factors into ABET accreditation self-studies, providing additional incentive for all professors to remain engaged with their discipline and craft.

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 Thurgood Marshall Library supports teaching and learning through a variety of materials and resources that can support a curriculum for Immersive Media, Gaming, Animation, and Computer Science. The library also supports this proposed major with a collection of over 280,000 volumes (physical and electronic), over 700 academic subscription titles, an electronic portal (Research Port) to over 70 databases, VERVERSI as well as videos and DVD recordings, and an 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. The Thurgood Marshall Library is a member of the University of Maryland system and Affiliated Institutions (USMAI), strengthening the resource base for all users. As a member of (USMAI), Bowie State University also has access to the collections of thirteen university libraries in the state of Maryland. In addition to borrowing privileges, the Marshall Library also offers ILL (Interlibrary Loan). Materials not available within USMAI can be requested through interlibrary loan, a nationwide resource for library users. A daily delivery between the participating libraries is provided to assist patrons in obtaining materials from other libraries in the system. In addition, 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 and digital collection of books and resources are appropriate for the proposed new major and program. 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 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 (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.**

<u>Computer Science</u> the Computer Science Building opened to the BSU community in 2002 as a "state of the art" facility that houses instructional, laboratory, and research spaces for Computer Science and related disciplines. The laboratory space will serve the complete needs of Virtual Reality & Gaming students. The computer science building includes sufficient flexibility in both classroom, office space, and laboratory space to accommodate the student body increases resulting from the launch of the new degree. The computer resources are available to faculty members and students in the Computer Science Department at BSU. These include fifteen general-purpose computing labs and five research labs. The research labs are described in the project description. Each of the general-purpose labs has 10 to 20 computers. Ten of the labs have computers with 22-inch monitors of the following specification:

- Platform: Windows 10 (64bit), Memory: 16 GB,
- Processor: Intel Xeon CPU E5-1620 v3 @ 3.50GHz,
- Motherboard: Dell Inc. 0K240Y,
- Graphics: NVIDIA Quadro K620 2.0 GB,
- Audio: NVIDIA High-Definition Audio, Realtek Audio,
- Optical: Tschopp DVD+-RW SH-216DB,
- Network: Intel(R) Ethernet Connection I217-LM, and
- Hard Drive: 500GB

Another ten labs have computers with the following specifications:

- Dell Precision Tower 5810,
- Platform: Windows 10 (64bit), Memory:16 GB,
- Processor: Intel Xeon CPU E5-1620 v3 @ 3.50GHz,
- Motherboard: Dell Inc. 0HHV7N,
- Graphics: AMD FirePro W2100 (FireGL V) Graphics Adapter 2.0 GB
- Audio: AMD High Definition,
- Audio Device Realtek Audio,
- Optical: HL-DT-ST DVD+-RW GTA0N,
- Network: Intel(R) Ethernet Connection I217-LM, and
- Hard Drive: 350GB

There are also conference rooms where faculty and students meet to discuss research and make presentations when needed.

<u>The Department of Fine and Performing Arts (DFPA)</u> The Department of Fine and Performing Arts (DFPA) students prepare for success in the Fine and Performing Arts Center (FPAC) a beautiful space featuring a movement studio, band room, Steinway piano rooms and rehearsal studios, a recital hall, a multimedia recording studio, fashion design studio, costume shop, digital music lab, and two theaters. FPAC also hosts two Apple computers and digital media labs with 36 stations; painting, visual art studio, printmaking, painting drawing, ceramic,

3D design/sculpture and photography rooms and studios, and a stop-motion animation studio powered by Laika Studios and a video edit suite set to launch in 2022-23. There are adequate faculty and staff support offices; a conference room, a student lounge and an additional art resource room for possible instruction, collaboration research and presentations to meet with outside guests, presenters, and partners. The Visual Communication & Digital Media Arts program (VCDMA) provides the latest in technology, film/video, and media production equipment and 4K DSLR and digital cinema cameras, audio, lighting, rigging, dollies and much more. The VCDMA program offers 2D/3D animation software, large format printers and resources for research in design, media arts, fashion/costume design, film, animation, visual communication as well as hip-hop studies and visual culture. BSU recently received generous funding and support from Adobe and is now offering the Adobe Creative Cloud suite of creative applications to all students and faculty on campus. The digital media labs in FPAC provide access to the following software: Autodesk Maya, CLO3D, Cinema 4D, Adobe After Effects, Photoshop, Illustrator, Animate, Premiere, Audition, XD, Acrobat; as well as Apple based software such as Final Cut Pro, Compressor, Motion, and screenwriting software, Celtx. Additional animation software includes Toon Boom Harmony, Storyboard Pro and DragonFrame. Most classrooms and spaces in both the Computer Science building and Fine and Performing Arts Center are equipped with smart boards, computers, and hyflex classrooms, AV projection capabilities. The small incremental increase in class sections each semester for the majors will not strain the usage of classroom space or instructional resources. Bowie State provides all students with full access to campus counseling, academic advisement services, IT support services, retention support and other administrative resources.

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

Students that take online course offerings within both programs will receive support comparable to that provided to residential students. All students will receive access to technology tools required to complete coursework and research, including University email support, LMS support, software development environment tools (compilers, editors, DBMS), and full access to the BSU IT help desk personnel. The Department of Computer Science has signed an agreement with Tele-Communications Systems to provide a cloud-based virtual lab environment and lab exercises accessible to online and residential students. The Department of Fine and Performing Arts also provides mixed modalities of instruction through classrooms/labs that are also equipped with smart boards, cameras, monitors, mobile and stationary hyflex/hybrid teaching spaces, and studios to support blended and flipped classrooms and support of students no matter where they are (online or in person); synchronous or asynchronous.

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

BSU demonstrates its commitment through budget reallocation and support from staff offices such as the library and IT department.

Table 11. Resources. This table projects revenue for full-time-equivalent students and part-time equivalent students for the initial five-year period. The department estimates that 10 new students will be admitted in the first year, 2-5 the second year, etc., increasing to a max of 30 full-time students in Years Four and Five, respectively. Part-time students are expected to be nominal. Graduates are expected by the fourth year.

TABLE 1: DEPARTMENTS OF COMPUTER SCIENCE & FINE AND PERFORMING ARTS RESOURCES					
Resource Categories	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
1.Reallocated Funds[1]	0	0	0	0	0
2. Tuition/Fee Revenue[2] (c+ g below)	72,577	85,887	152,988	214,288	302,704
a. #Full-Time Students	10	12	18	25	30
b. Annual Tuition/Fee[4]	8,753	8,928	9,107	9,289	9,475
c. Annual Full-Time Revenue (a x b)	87,530	107,137	163,919	232,219	284,236
d. # Part-Time Students	3	4	6	8	10
e. Credit Hour Rate[5]	258	263	268	274	279
f. Annual Credit Hours	18	20	40	40	60
g. Total Part-Time Revenue (d x e x f)	13,932	21,053	64,422	87,613	167,560
3. Grants, Contracts, & Other External Sources[3]	0	0	0	0	0
4. Other Sources	0	0	0	0	0
TOTAL (Add 1 – 4)	**72,577**	**83,887**	**152,988**	**214,288**	**302,704**

1. Whenever reallocated funds are included among the resources available to new programs, the following information must be provided in a footnote: origin(s) of reallocated funds, impact of the reallocation on the existing academic program(s), and the way the reallocation is consistent with the institution's strategic plan.

2. This value represents 67% of the projected total Tuition & Fee revenues for Full-Time & Part-Time students since mandatory fees are allocated to Auxiliary PT rate only reflects the tuition rate.

3. Whenever external funds are included among the resources; the following information must be provided in a footnote: source of the funding and alternative methods of funding the program after the cessation of external funding.

4. Tuition Rate is based on the posted FY 2023 Proposed Tuition and Rate schedule with a 2% increase in the subsequent years.

5. Credit Hour Rate is based on the FY 2023 Proposed Tuition & Rate Schedule with a 2% increase in the subsequent years.

Table 12. Department of Computer Science Expenditures

This table describes projected expenditures. Although most of the faculty and support staff, instructional tools, and facilities are already in place in the Department of Computer Science (CS), it is anticipated that the new proposed program will require an additional full-time faculty member and one adjunct faculty.

TABLE 2: EXPENDITURES COMPUTER SCIENCE					
Expenditure Categories	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**FY 2027**
1. Total Faculty Expenses (b + c below)	92,249	94,094	95,975	97,895	99,852
a. # FTE	1	1	1	1	1
b. Total Salary[1]	69,360	70,747	72,162	73,605	75,077
c. Total Benefits[2]	22,889	23,347	23,813	24,290	24,775
2. Total Assistant Systems Administrator Expenses (b + c below)	71,559	72,990	74,451	75,940	77,459
a. # FTE	1	1	1	1	1
b. Total Salary[3]	53,804	54,880	55,978	57,098	58,240
c. Total Benefits[4]	17,755	18,110	18,473	18,842	19,219
3. Total Adjunct Expenses (b + c below)	42,120	42,962	43,822	44,698	45,592
a. # FTE	1	1	1	1	1
b. Total Salary[5]	39,000	39,780	40,576	41,387	42,215
c. Total Benefits[6]	3,120	3,182	3,246	3,311	3,377
4. Equipment[7]	10,000			10,000	
5. Library					
6. New or Renovated Space					
7. Other Expenses	5,000	5,000	5,000	5,000	5,000
TOTAL (Add 1 - 7)	**220,928**	**215,046**	**219,248**	**233,533**	**227,903**

1-Average Salary for Assistant Professors in Computer Science for FY 2021 with a 2% increase in subsequent years.
2-Average Benefits for Assistant Professors in Computer Science for FY 2021 is 33% of salary with a 1% increase in subsequent years.
3-Average Salary for Assistant Systems Administrator in FY 2021 with a 2% increase in subsequent years.
4-Average Benefits for Assistant Systems Administrator in FY 2021 is 33% with a 1% increase in subsequent years.
5-Average Salary for Adjunct Faculty ($6,500 per course x 6 courses) in FY 2021 with a 2% increase in subsequent years.
6- Average Benefits for Adjunct Faculty in FY 2021 is 8% with a 1% increase in subsequent years. 7-Equipment is the cost for (2-3) computers on a three-year replacement cycle.

Table 13: DFPA Expenditures. This table describes projected expenditures. Although most of the faculty and support staff, instructional tools, and facilities are already in place in the Department of Fine and Performing Arts (DFPA), it is anticipated that the new proposed program will require an additional full-time faculty member, one program coordinator/faculty and an adjunct professor. Additional costs for advertising and promotional materials are estimated at $3, 500/year.

TABLE 2: EXPENDITURES DFPA					
Expenditure Categories	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
1. Total Faculty Expenses (b + c below)	86, 450	88, 179	89, 942	91, 742	93, 817
a. # FTE	1	1	1	1	1
b. Total Salary[1]	65, 000	66, 300	67, 626	68, 979	70, 539
c. Total Benefits[2]	21, 450	21, 879	22, 316	22, 763	23, 278
2. Total Faculty Coordinator Expenses (b + c below)	94, 750	99, 070	101, 153	103, 176	105, 240
a. # FTE	1	1	1	1	1
b. Total Salary[3]	70, 000	71, 400	72, 828	74, 285	75, 771
c. Total Benefits[4]	24, 750	27, 670	28, 325	28, 891	29, 469
3. Total Adjunct Expenses (b + c below)	6, 480	6, 610	6, 741	6, 876	7, 014
a. # FTE	1	1	1	1	1
b. Total Salary[5]	6, 000	6, 120	6, 242	6, 367	6, 494
c. Total Benefits[6]	480	490	499	509	520
4. Equipment[7]	50, 000		75, 000		
5. Library					
6. New or Renovated Space					
7. Other Expenses	2, 500	2, 500	2, 500	2, 500	2, 500
TOTAL (Add 1 - 7)	**240, 180**	**196, 359**	**207, 836**	**204, 294**	**208, 571**

1- Average Salary for Assistant Professors in DFPA for FY 2021 with a 2% increase in subsequent years.
2- Average Benefits for Assistant Professors in DFPA for FY 2021 is 33% of salary with a 1% increase in subsequent years.
3- Average Salary for Program Coordinator in FY 2021 with a 2% increase in subsequent years. 4-Average Benefits for Program Director in FY 2021 is 33% with a 1% increase in subsequent years.
5- Average Salary for Adjunct Faculty ($3, 000 per course x 2 courses) in FY 2021 with a 2% increase in subsequent years. Average Benefits for Adjunct Faculty in FY 2021 is 8% with a 1% increase in subsequent years.
6- Equipment is the cost for computers, upgrades, motion capture suits, software on a three-year replacement cycle.

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.

Courses and curriculum will be reviewed annually for effectiveness via course evaluations, course reviews and assessments of student work, research, projects, including capstones, portfolio reviews and demonstrations to be reviewed by faculty and an advisory board. This board will consist of industry experts, strategic partners as well as university faculty from other institutions. There will also be extensive program review of the entire major by external reviewers as well as the College of Arts and Sciences and Academic Affairs. The processes for evaluating courses, faculty, and student learning outcomes will follow the guidance presented by the ABET Council on Computing. Industry and graduate schools recognize ABET accreditation as the hallmark of excellence in undergraduate STEM education.

Faculty evaluation will follow BSU guidelines for all faculty members, including evaluation input from students, administrators, and departmental personnel, per COMAR 13b.02.03.15. In addition, faculty evaluations will include the following:

- Evaluation of faculty qualifications and how they are adequate to cover all the curricular areas of the two majors and programs—this will include the size, specialization, credentials, and experience of the faculty.
- Analysis of faculty workload; and
- Professional development opportunities for each faculty member.

Evaluation of student learning outcomes in Computer Science will be based on assessment of the stated ABET and outcomes using the continuous improvement processes. Additionally, for the Department of Fine and performing Arts (VCDMA) once membership is obtained, there will be periodic reviews by accrediting bodies such as NASAD: National Association of Schools of Art and Design to retain membership and demonstration of program success, effectiveness, and accountability.

2. Explain how the institution will evaluate the proposed program's educational effectiveness, including assessments of student learning outcomes, student retention, student and faculty satisfaction, and cost-effectiveness.

The evaluation of the program educational objectives will follow the same process currently used for both BS degrees and majors and for each department. Evaluation of the program's educational effectiveness will include:

- Ensuring that the program's educational objectives are aligned to the BSU mission.
- Ensuring that the program's educational objectives align to the needs of the constituencies.
- Following a documented process and timeline to review the program educational objectives. Following a documented process to ensure that the student outcomes are mapped to the program educational objectives.
- Analyzing how the program's requirements and its associated prerequisite structure support the attainment of student outcomes.
- Analysis of program criteria describing how the program meets the specific requirements for the Game Design, Animation, XR and entertainment fields as they evolve. Analysis of materials (syllabi, textbooks, samples of student work—low, medium, and high graded) that will be available for accreditors during site visits.
- Analysis of class size on achievement of learning outcomes.
- Evaluation of student retention and student achievement will follow established BSU policy used by all departments. The courses, the program's effectiveness, enrollment, retention and graduation rates, students, instructors, and staff satisfaction will be evaluated using student, faculty, and staff surveys and program committee reviews on a regular basis.

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 high quality higher education to African Americans and other underrepresented minorities. The goals established in the University's Racing to Excellence FY 2019 – FY 2024 Strategic Plan supports 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).
- 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 we can better meet the holistic needs of our students (Innovation, Strategy 11). Bowie State University has a long-standing core commitment to diversity; it values and celebrates diversity in all 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. As the University aspires to even greater racial diversity, it 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

This new program has no relationship with a low productivity program identified by the 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.

The university has the resources to offer a quality distance education program. It utilizes the state-of-the-art Blackboard system and cloud-based virtual laboratories. All faculty are trained in offering distance learning courses.

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

Bowie State University is a participating institution of NC-SARA and has met the nine guidelines as required by the Council of Regional AccreditingCommissions (C-RAC).

APPENDIX A. – Course Schema and 4 –Year Plans for both BS degrees

Core Courses (for both majors) shared by CS and DFPA:

Course #	Course Title	Credit Hours
COSC 109	Gaming I	3
COSC 112	Computer Science I	4
COSC 113	Computer Science II	4
COMM 220	Gaming Industry: Principles, Strategies and Fundamentals	3
COSC 209	Gaming II	3
COSC 214	Data Structures and Algorithms	4
COSC 309	Gaming III	3
COSC 317	Augmented, Virtual & Mixed Reality	3
Course #	**Course Title**	**Credit Hours**
VCDM 394	History of Animation or VCDM 367 Design History	3
VCDM 396	2D Digital Animation I or VCDM 392 Motion Graphics	3
COSC 477	XR Virtual Reality and its Principles	3
COSC 479	Immersive XR Virtual Reality	3
COSC 494	Gaming IV (Capstone)	3
	Total Core Courses	42

Supporting Courses:

Course #	Course Title	Credit Hours
MATH 155	Probability and Statistics (CS)	3
MATH 225	Calculus I	4
COSC 208	Discrete Structures	3
MATH 228	Linear Algebra	3
ENGL 362	Technical Writing	3
BIOL 101	Biological Science (Life Science)	4
PHYS 271	General Physics I (Physical science)	4
	Total Supporting Requirements Credits	24

Additional supportive courses (suggested):

IDIS 110 Introduction to Entrepreneurship and or IDIS 210 Problem-Solving Using Design Thinking, MGMT 101 Introduction to Business (- 3 CREDITS each). Other COSC, VCDM, ART, ENGL, MGMT & MKTG elective courses in Computer Science and VCDMA, Studio Arts (Fine Arts), Language, Literature and Cultural Studies, Business and Marketing.

Course #	Course Title	Credit Hours
COMM 101	Oral Communications	3
Arts and Humanities elective		3
Social Sciences		**6**
HIST 114 or HIST 115	African American History to 1865 African American History since 1865	3
Social Sciences Elective		3
Technology FULFILLED BY MAJOR		3/4
	Total General Education	**46/47**

BS Degree in Virtual Reality & Gaming, Computer Science Required Courses

Course #	Course Title	Credit Hours
COSC 374	Object-Oriented Design	3
COSC 375	Object Oriented Design and Development	3
COSC 402	Software and Operating System Security	3
COSC 418	Principles of Computer Graphics (required)	3
COSC 431	Database Management (required)	3
COSC 465	Software Engineering (required)	3
COSC 469	Advanced Software Engineering (required)	3
COSC 473	Artificial Intelligence (required)	3
COSC 474	Machine Learning and Discovery	3
COSC 476	Natural Language Processing	3
COSC 485	Data Communications and Networks	3
	Total Required Course Credits: 33	

BS, Virtual Reality & Gaming course scheme and 4-year plan General Education and Institutional Requirements

Freshman Year

First semester	Credit	Second Semester	Credit
COSC 112 Computer Science I	4	COSC 113 Computer Science II	4
MATH 225 Calculus I	4	MATH 226 Calculus II	4
ENGL 101 Expository Writing	3	ENGL 102Argument and Research	3
FRSE 101 Freshman Seminar	3	COMM 101 Oral Communication	3
COSC 109 Gaming I	3	COSC 209 Gaming II	3
Total:	**17**	**Total:**	**17**

Sophomore Year

First semester	Credit	Second Semester	Credit
COSC 208 Discrete Structures	3	COMM 200 Gaming Industry: Principles and Fundamentals	3
COSC 214 Data Structures and Algorithms	4	MATH 228 Linear Algebra	3
IDIS 110 Introduction to Entrepreneurship	3	BIOL 101 Biological Science	4
MATH 155 Probability and Statistics	3	HIST 114 or 115 African American History	3
Social /Behavioral Science Gen Ed Elective	3	Health and Wellness Elective	3
Total:	16	Total:	16

Junior Year

First semester	Credit	Second Semester	Credit
PHYS 271 General Physics	3	COSC 418: Principles of Computer Graphics	3
COSC 309 Gaming III	3	VCDM 394 History of Animation	3

COSC 317 Augmented, Virtual & Mixed Reality	3	ENGL 362 Technical Writing for Computer Science (suggested)	3
		Arts and Humanities Gen Ed Elective	3
COSC 431: Database management	3	COSC 465: Software Engineering	3
Total:	12	Total:	15

Senior Year

First semester	Credit	Second Semester	Credit
VCDM 396 2D Animation I	3	COSC 429: Data Visualization	3
COSC 477 Virtual Reality & its Principles	3	COSC 479 Immersive Virtual Reality	3
COSC 469: Advanced Software Engineering	3	COSC 499 Gaming IV	3
COSC 473: Artificial Intelligence	3	COSC 474 Machine Learning	3
Elective	3		
Total:	15	Total:	12

BS Degree, Immersive Media, Entertainment and Gaming (IMEG), Fine and Performing Arts (VCDMA) required courses

Course #	Course Title	Credit Hours
ART 101	2D Design (required) GEN ED	3
ART 102	3D Design or ART 310/311 Sculpture (required)	3
ART 110	Intro to Drawing (required GEN ED)	3
MUSC 230	Intro to Sound Design for Visual Media: Animation, Film, Gaming	3
VCDM 215	Animation: Design, Concepts and Principles	3
VCDM 219	Portfolio Review and Assessment I (required)	0 (Pass/Fail)
VCDM 220	Gaming, Animation and Entertainment Design I	3
VCDM 230	Computer Graphics	3

BS Degree, Immersive Media, Entertainment and Gaming (IMEG),
Fine and Performing Arts (VCDMA) required courses continued:

VCDM 320	Gaming, Animation and Entertainment Design II	3
VCDM 368	Special Topics: Immersive Media Arts & Design I	3
VCDM 378	Special Topics: Immersive Media Arts & Design II	3
VCDM 394	History of Animation OR VCDM 367 Design History OR VCDM 408 Visual Culture (required)	3
VCDM 396	2D Digital Animation I or VCDM 392 Motion Graphics I	3
VCDM 464	Special Topics: Virtual Production Studio	3
VCDM 468	Game Development & Design Project II (Senior Capstone)	0 (Pass/Fail)
VCDM 496	3D Modeling & Animation I (required)	3
VCDM 497	3D Modeling & Animation II (required)	3
VCDM 419	Portfolio Review and Assessment II	0 (Pass/Fail)
VCDM 491	Internship/Apprenticeship in Visual Communication	1
		46 Credit Hrs.

GENERAL EDUCATION REQUIREMENTS

English Composition (6 semester hours)

ENGL 101 - Expository Writing - 3 CREDITS
ENGL 102 - Argument and Research - 3 CREDITS

Arts and Humanities (6 semester hours)
Arts and Humanities Electives - 3 CREDITS
Arts and Humanities Electives - 3 CREDITS

Natural Sciences (7-8 semester hours; at least one of which shall be a laboratory course)
Science Elective 3/4 Credits
Science Elective w/laboratory course - 4 CREDITS

Mathematics (3 semester hours)
MATH 125 College Algebra - 3 CREDITS
MATH 127 Introduction to Math Ideas - 3 CREDITS
MATH 128 Elementary Geometry (prerequisite is MATH 127) - 3 CREDITS

Social & Behavioral Sciences (6 semester hours)
Social/Behavioral Elective - 3 CREDITS
AND *HIST 114 - African American History to 1865 OR
*HIST 115 - African American History Since 1865 - 3 CREDITS (Choose one)
 *One is mandatory

Technology (3 semester hours) - choose one
COSC 110 - 3 CREDITS
COSC 111 - 3 CREDITS
COSC 112 - 3 CREDITS
COSC 113 - 3 CREDITS
CTEC 111/114/125 - 3 CREDITS

Health & Wellness (3 semester hours) - choose one
HEED 102 Life and Health or
HEED 200 Fundamentals of Sex Education or IDIS 210 Women's Health Issues - 3 CREDITS

Freshman Seminar (3 semester hours)

FRSE 101 Freshman Seminar - 3 CREDITS
Substitute course if transferring in more than 12 credits

Free General Education Electives (9 semester hours) Free General Education Electives: 9
semester credits for Bachelor of Science (BS) degree. Selected courses chosen from any category
within the General Education Course (GE) List. See advisor and refer to catalog for approved
courses. **Total General Education (GE) Requirements: 46/47 credits**

Immersive Media, Entertainment and Gaming (IMEG)

Freshman Year

First Semester		
ART 101	2D Design	3 CREDITS (GE)
ART 110/ART 111	Introduction to Drawing or Life Drawing	3 CREDITS (GE)
ENGL 101	Expository Writing	3 CREDITS (GE)
HEED 102	Life and Health	3 CREDITS (GE)
FRSE 101	Freshman Seminar	3 CREDITS (GE)
	First Semester Total:	**15 Credits**

Second Semester		
ART 102	3D Design or ART 310/311 Sculpture	3 CREDITS
COSC 112	Computer Science I	4 CREDITS (GE)
ENGL 102	Argument and Research	3 CREDITS (GE)
MATH 127	Introduction to Math Ideas	3 CREDITS
VCDM 230	Introduction to Computer Graphics	3 CREDITS (GE)
	Second Semester Total:	**16 Credits**

Sophomore Year

First Semester		
COMM 101	Oral Communication or COMM 220 Gaming Industry: Principles, Strategies and Fundamentals (or COMM 103)	3 CREDITS
COSC 113	Computer Science	4 CREDITS
COSC 209	Gaming II	3 CREDITS
VCDM 215	Animation: Design, Concepts and Principles	3 CREDITS
**VCDM 219	Portfolio Review & Assessment (0 Credits)	PASS/FAIL
VCDM 220	Gaming, Animation and Entertainment Design I	3 CREDITS
	First Semester Total:	16 Credits

Second Semester		
COSC 214	Data Structures and Algorithms	4 CREDITS
MUSC 230	Intro to Sound Design for Visual Media: Animation, Film, Gaming and Entertainment	3 CREDITS (GE)
VCDM 320	Gaming, Animation and Entertainment Design II	3 CREDITS
VCDM 394	History of Animation or VCDM 367 Design History or VCDM 267 History of Game Design, Immersive Media and Entertainment Arts (choose one)	3 CREDITS
Science Elective	Biology or Physics 101	3-4 CREDITS (GE)
	Second Semester Total:	16 or 17 Credits

Junior Year

First Semester		
COSC 309	Gaming III	3 CREDITS
HIST 114/115	African American History to 1865 or African American History Since 1865	3 CREDITS (GE)
MATH 125	College Algebra	3 CREDITS

VCDM 396	2D Animation or VCDM 392 Motion Graphics I	3 CREDITS

VCDM 496	3D Modeling & Animation I	3 CREDITS
	First Semester Total:	**15 Credits**

Second Semester		
ART/VCDMA elective 300/400 level studio	VCDM 392 Motion Graphics VCDM 395 Stop-Motion Animation (397) or other	3 CREDITS
COSC 317	XR-Augmented, Virtual and Mixed Reality	3 CREDITS
VCDM 378	Special Topics: Immersive Media Arts & Design	3 CREDITS
VCDM 497	3D Modeling & Animation II	3 CREDITS
_____	Social/Behavioral Science Elective (PSYC, SOCI, ANTH 101)	3 CREDITS (GE)
	Second Semester Total:	**18 Credits**

Senior Year

First Semester		
COSC 477	Virtual Reality and its Principles	3 CREDITS
COSC 479	Immersive Virtual Reality	3 CREDITS
VCDM 368	Animation, Game Design and Production I	3 CREDITS
VCDM 491	Internship (or VCDM 492)	1 CREDIT
VCDM 464	Special Topics: Virtual Production Studio	3 CREDITS
	Second semester Total:	**13 Credits**

Second Semester		
COSC 494	Gaming IV (Capstone)	3 CREDITS
ENGL 361	Technical Writing or ENGL 333 Graphic Novels (253/261) – Choose one	3 CREDITS

Science Elective	Biology (BIOL 101, 203 or PHYSICS 101)	3 CREDITS (GE)
*** VCDM 468	Game Development & Design Project II (Senior Capstone)	3 CREDITS Pass/Fail
*** VCDM 419	Portfolio Review & Assessment II (2nd Review)	0 CREDITS PASS/FAIL
	Second semester Total: 12	12 Credits

TOTAL PROGRAM CREDITS: 121-122

Additional Requirements

** VCDM 219 Portfolio Review & Assessment (1st Review): 0 Credits, Pass/Fail; required. Students must submit a portfolio and successfully pass the 1st and 2nd portfolio review/ assessment. In addition, they must submit a senior capstone for a game design or XR project proposal, min. 2 pages, typed with sketches, references, storyboards, prototype, etc.

** VCDM 419 Portfolio Review & Assessment II (2nd Review): 0 Credits, Pass/Fail; required. Students must submit a portfolio and successfully pass the 1st and 2nd portfolio review/ assessment. In addition, they must submit a senior capstone for a game design or XR project proposal, min. 2 pages, typed with sketches, references, storyboards, prototype, etc.

** VCDM 468 Senior Capstone: The Product. 0 Credits, Pass/Fail; required. Students must submit, test, display and/or exhibit to VCDM faculty a successful senior capstone product or prototype such as a game and/or XR experience and based in the approved project proposal. A written evaluation of the product is required as well as documentation from concept to completion, blog, sketches, iterations, website (portfolio). (GE) = General Education (CS) = Computer Science (VCDM) = VCDMA ** Assessment/Internship/Graduation Requirements (VCDMA)

APPENDIX B. COURSE DESCRIPTIONS

COMPUTER SCIENCE

COSC 109: Gaming I - 3 Credits. *Prerequisite(s): None.* This course will introduce students to the process of good game design. Students will work in teams in an iterative process to design, implement, and evaluate a 2D game. Topics will include idea generation, storyboarding, and human computer interaction. The course will include readings, play testing, and each team will present their completed game in a game showcase at the end of the course.

COSC 209: Gaming II - 3 Credits. *Prerequisite(s): COSC 109 or COSC 112.* This course focuses on designing simple playable games, each exploring different aspects of game design such as rule design, game balance, multiplayer strategy, complexity, randomness, narrative, psychology, emergent behavior and aspects of physical game bit and interface design. The course will cover game design concepts through readings, presentations, play testing, and emphasize hands-on development of games.

COSC 309: **Gaming III -** 3 Credits. *Prerequisite(s): COSC 113, 209.* This course introduces techniques used to create computer animation. Topics include principles of animation, motion planning, and generation, key framing, kinematics, inverse kinematics, and motion technology. Students will develop a game using Computer Graphics Library.

COSC 317: Augmented, Virtual and Mixed Reality - 3 Credits. *Prerequisite(s): COSC 113, 209:* This course introduces students to the design process for producing virtualreality (VR), augmented reality (AR), and mixed reality (MR) games. The course covers a wide range of literature and practice starting from the original computer science and HCI concepts through the evolution of all supporting technologies including visual displays (for VR, AR, and MR), motion tracking, interactive 3D graphics, multimodal sensory integration, immersive audio, user interfaces, IoT, games and experience design.

COSC 489: Immersive Virtual Reality - 3 Credits. *Prerequisite(s): COSC 317, 477:* This course covers the technical and experiential design foundation required for the implementation of immersive environments in virtual, augmented, and mixed reality platforms. This course will apply player-centric game design frameworks to create immersive 3D experiences using the latest hand-held and wearable devices. Project work will explore how VR-AR game design can make immersive experiences more fun, how game engines with extended reality devices are becoming the film cameras of the future for immersive cinema and 3D animation.

COSC 499: Gaming IV - 3 Credits. *Prerequisite(s): COSC 309, 477:* This game design and development capstone course will involve a full production cycle of game development from brainstorming concepts to designing, implementation, playtesting, and evaluating a complete game. Topics will include graphics game engines, motion generation,behavioral control for autonomous characters, interaction structure, and social and interfaceissues of multi-user play. The course will emphasize hands-on development of games and students will document their work in the form of written reports and oral presentations.

COSC 112: Computer Science I - 4 Credits. *Prerequisite(s): None.* (Students without programming experience may be advised to take COSC 111 before or concurrently with COSC 112.) This course is a study of the formal syntax and semantics of a programming language. Topics include expressions, assignments, declarations, control structures, arrays, data abstractions, subprograms, user interfaces, error handling, end of file handling, and string handling. Aspects of Software Engineering include top-down design, structured programming, and style in programming conducted in a block structured language. Ethical and social issues include information privacy, data reliability, data security, including wiretapping and encryption and ergonomics. This course may be used to satisfy the General Education Requirement in the Technology category.

COSC 113: Computer Science II - 4 Credits. *Prerequisite(s): COSC 112.* Prerequisiteor taken concurrently: MATH 141 or MATH 150. Students are introduced to the programming tools required to solve a more advanced set of problems. Students further develop their knowledge of the principles of object-oriented design and programming, including the use of interfaces and inheritance. Topics include arrays, strings, records, classes, inheritance and composition, pointers, recursion, and linked lists. It is designed for students who have prior training in computer concepts and terminology. Professional ethics and social issues (including sustainability) which relate to professionalism in Computer Science are also considered. This course may be used to satisfy the General Education Requirement in the Technology category.

COSC 214: Data Structures and Algorithms - 4 Credits. *Prerequisite(s): COSC 113 or COSC 190.* This course explores the definitions and implementations of basic data structures such as stacks, queues, linked lists, binary trees, etc.; internal searching and sorting algorithms; and garbage collection algorithms. Design of sort and search algorithms and introductory analysis associated with the basic data structures, as well as recursive algorithms, are discussed.

COSC 208: Discrete Structures - 3 Credits. *Prerequisite(s): COSC 113 or COSC 190 and either MATH 141 or MATH 150.* The course covers fundamental mathematical conceptsand algebraic structures, such as Logic, Sets, Relations, Functions, Induction and Recursion, Probability & Statistics, and an introduction to the theory of graphs and trees. It is a course in discrete mathematics that is an integral part of computer science's undergraduate curriculum. The course's purpose is to ensure that the students become comfortable with the theoretical framework within which ideas in computer science are expressed.

COSC 374: Object- Oriented Design and Development - 3 Credits. *Prerequisite(s): COSC 214.* This course covers the design and development of object- oriented programs. Specifically, students will study object-oriented design methods, classes, inheritance, polymorphism, and software engineering issues. Students will acquire the ability to analyze a problem using object-oriented techniques. They also willlearn a widely used object-oriented language such as JAVA, using a Unix platform.

COSC 477 – Virtual Reality and its Principles - 3 Credits. *Prerequisite(s): or taken concurrently: COSC 113; or consent of instructor.* This course introduces students to Virtual Reality (VR) hardware and software. It provides an opportunity for them to apply this knowledge to applications for education and games. This course applies cutting-edge virtual reality technology currently available in academia and industry. Students will design, model, and script the VR environment by developing a complete VR application as a group project.

COSC 402: Software and Operations System Security - 3 Credits. *Prerequisite(s): COSC 330 or Consent of Instructor.* This course will examine security principles and practices important to operating systems and programming. Topics include OS security architecture; memory security; authentication, including account and password protection mechanisms; assessing OS vulnerabilities; programming security and attacks such as buffer overflow attacks and writing secure code; application interaction; module control; auditing host security, including operational logs; malicious logic including viruses and virus protection; and security applications.

COSC 410: Data Communications and Networks - 3 Credits. Prerequisite(s): COSC214 and COSC 284. This course explores the fundamentals of data communication and computer networking: common carrier implications, tariffs, exchanges, concentrators, multiplexors, and buffering; circuit, message, and packet switching; network architectures and protocols; protocol standards, modeling, and analysis; cost and design; software considerations are emphasized. (Formerly: COSC 485)

COSC 418: Principles of Computer Graphics - 3 Credits. *Prerequisite(s): COSC 214or MATH 228.* This course introduces students to basic concepts and essential principles of Computer Graphics from programming perspective. It includes topics such as Geometric Modeling, Lighting/Shading, Subdivision of Curves and Surfaces, Mesh Parameterization, Texture Mapping, Morphing, and Animation. Students will use a standard Computer Graphics Library and develop simple algorithms of Computer Graphics to reinforce the concepts.

COSC 431: Database Management - 3 Credits. *Prerequisite(s): COSC 214.* This course is an introduction to concepts, design objectives, tools, and principles database management system software. Descriptors, structures, database system architectures, entities, relationships, and data models. The relational, network and hierarchical database models, normal forms, and canonical data structures will be studied as a basis for logical organization. Relational algebra and calculus, introduction to concurrency, and transaction management are studied.

COSC 465: Software Engineering - 3 Credits. *Prerequisite(s): COSC 214.* This course introduces the student to major topics in software engineering such as: requirements specification, analysis and design, testing, project management, and implementation. Additional topics such as software life cycle models, the Unified Modeling Language (UML), agile software development techniques, configuration management, change control and version control tools, object-oriented design, and project documentation will be discussed.

COSC 473: Artificial Intelligence - 3 Credits. *Prerequisite(s): or taken concurrently: COSC 113; or consent of instructor.* This course introduces students to Virtual Reality (VR) hardware and software. It provides an opportunity for them to apply this knowledge to applications for education and games. This course applies cutting-edge virtual reality technology currently available in academia and industry. Students will design, model, and script the VR environment by developing a complete VR application as a group project.

COSC 474: Machine Learning and Discovery - 3 Credits. *Prerequisite(s): COSC 214.* Artificial intelligence techniques for knowledge acquisition by computers. Fundamental problems in machine learning and discovery. Systems that learn from examples, analogies, and solved problems. Systems that discover numerical laws and qualitative relationships. Projects centering on implementation and evaluation.

COSC 476: Natural Language Processing - 3 Credits. *Prerequisite(s): COSC 474.* This course covers a broad range of topics in natural language processing. It is intended for students who are familiar with machine learning fundamentals. Topics include finite-state methods; context-free and extended context-free models of syntax, parsing and semantics interpretation; n-gram and Hidden Markov models; part-of-speech tagging; coreference resolution; discourse structure; and natural language applications such as machine translation, automatic summarization, sentiment analysis and question answering.

Course Descriptions Department of Fine & Performing Arts (Studio & VCDMA)

ART 101: 2D Design - 3 Credits. this course is a study of visual organization. Theories of spatial organization and designing in various materials will be studied.

ART 102: 3D Design - 3 Credits. this course is a study of visual organization. Theories of spatial organization and designing in various materials will be studied.

ART 110: Introduction to Drawing - 3 Credits. This course provides thefundamentals in the practice of drawing in various media, development of artistic discrimination, and drawing skills.

ART 111: Life Drawing - 3 Credits. This course is a study ofthe costumed and nude figure.

ART 310: Portrait & Figure Sculpture - 3 Credits. Armature construction and practical experience in creating basic forms in metal, clay, plaster, wood, and stone willbe provided

VCDM 215: Animation, Design Concepts and Principles - 3 Credits.
An introductory course to cover an overview of the basics of animation and motion graphics, principles of animation, drawing for animation, character, scenic design, and storyboarding.

VCDM 220: Gaming, Animation & Entertainment Design I – 3 Credits. This course provides the foundations to interactivity, immersive technology, and visual approaches to using design tools to create animation, motion graphics, sound, film to produce a successful game, immersive, and/or interactive experience.

VCDM 267: History Of Game Design, Immersive Media And Entertainment Arts - 3 Credits. Prerequisite: ENGL 102. A course in the theory and critical overview of the history of the video gaming and game design industry, entertainment media, and immersive technology and its impact on society, business, and connections to popular culture.

VCDM 320: Video Gaming, Animation & Entertainment Design II -
3 Credits**.** Prerequisites VCDM 220. This advanced studio course will provide students with hands-on storytelling, conceptualization, design, and creation of visual, interactive, and immersive experiences for entertainment such as motion capture, game design, animation, motion graphics, and cinema production techniques.

VCDM 315: Conceptual Thinking in Drawing And Illustration

3 Credits. Prerequisite (s): ART 110 or 111. Through a series of illustration-based exercises and problems students will be helped to enhance creative and technical skills for communicating visual concepts. Students will learn the professional processes of collecting reference work, creating thumbnail sketches and rough drafts. Projects are designed to increase knowledge and understanding of compositional strategies, color theory, conceptualization and exploration of materials and techniques. Students will use prior experience in drawing, painting, graphic arts, digital media or art made from repurposed materials to develop strong and effective illustrations for the purpose of marketing, journalism or personal expression.

VCDM 360: Digital Cinematography I - 3 Credits. This course is a study of the principles of digital video/cinema including the use, operation, basic digital video editing, as well as the developing narratives and scripts for short video projects and exercises.

VCDM 361: Digital Cinematography II: Advanced Digital Editing & Compositing Techniques - 3 Credits. Prerequisite(s): JuniorStanding, VCDM 360 formerly Cinematography II. This course is a continuation of ART 360. Emphasis is on special digital video and compositing techniques, as studentswill develop a short digital video project over the course of the semester.

VCDM 367: Design History - 3 Credits. Prerequisite(s): ENGL 102. The course will focus on the historical and technological developments in design over the 19th, 20th and current century. This course will look at how design has helped shape and communicate with society's values, and contributions in design and technological innovations.

VCDM 368: Animation, Game Design & Production I. - 3 Credits. Prerequisite(s): VCDM 320 & 496. Students work collaboratively to design, prototype and develop all phases of production of a final game, virtual, immersive entertainment product, and/or prototype for the senior capstone, portfolio.

VCDM 370: Screenwriting 3 Credits. Prerequisite(s): ENGL 102. An overview of screenwriting and provides VCDMA students and introduction to the basic principles of writing and developing narratives for film and television. The course will also provide a foundation in writing narratives for digital video/film production and provide students an understanding the screenplay format, editing and revision process as well as the basics of the business of screenwriting.

VCDM 378: Immersive Media Arts & Design 3 Credits. Prerequisite(s): VCDM 320. Students are provided techniques the best practices in design, art, and aesthetics for immersive, interactive experiences and production as well as XR, VR, AR technologies; and as they intersect with visual media and content creation.

VCDM 392: Motion Graphics - 3 Credits. Permission of instructor only. Advanced Standing and/or VCDM 340. This course provides an overview of industry-standard motion graphics tools and techniques, and provides training in advanced compositing techniques, animation, and modeling used in real-world studio situations.

Students are guided through 2D animation, visual effects, compositing, rendering, lighting, and setup for animation. Motion Graphics further covers 3D modeling for objects, environments, particle systems, materials, lighting, and 3D simulation.

VCDM 394: History Of Animation - 3 Credits. Prerequisite: ENGL 102. This course will explore the history of American animation from film to television. In addition to the major animation studios, the course will explore the role of minority and female animators. The influence of animation on media will be addressed from the aesthetic, technical, business, and cultural perspectives.

VCDM 395: Stop-Motion Animation - 3 Credits. This is a hands-on studio course that focuses of stop-motion and experimental animation, as well as the genres of replacement animation, pixilation, puppet, paper, cut-out, object animation, motion graphicsand visual effects. The course emphasizes the principles of animation as it intersects film and digital media production, technology, and the television and film industry.

VCDM: 396 2d Digital Animation I - 3 Credits. This course is an introduction to animation using state-of-the-art software and hardware for motion graphics. It provides a study of animation principles as well as techniques in producing two dimensional digital animations.

VCDM 397: 2d Digital Animation II - 3 Credits. As a continuation of VCDM 396, this course allows students to develop skills in two-dimensional digital animation production, character animation, motion graphics, and advanced animation principles. Students will work on a variety of lessons throughout the semester and on an extended animated production.

VCDM 407: African American Cinema - 3 Credits. Prerequisite(s): Advancedstanding; ENGL 213 or ENGL 250, and VCDM 360. This advanced course examines in depth the art, history, aesthetics, and cinematography of films produced by African Americans and women of color. This examination will focus on several elements, including

the filmmakers, directors, actors, production (studio produced vs. independent), technical and production elements, characterization, genre and film language.

VCDM 408: Visual Culture - 3 Credits. A visual study and critical discourse on the aesthetics of contemporary art and theory as it intersects with urban culture and artistic movements such as hip-hop. This course explores the aesthetics, philosophies, and foundations of hip-hop by focusing on musical, poetic (spoken word), and visual expressions rooted within the culture. Visual and performance artists who have been influenced by and who incorporate hip-hop into their work will also be studied. Students will also study the relationship between hip-hop to visual art, multimedia, video/film, as well as with other cultures, and the political, social, and historical movements in African American history.

VCDM 410: Hip-Hop Studio - 3 Credits. An interdisciplinary and advanced course that incorporates an innovate approach to combining workshop, lecture and studiointo actual creative projects using hip-hop and the elements of MCing, DJing, Graffiti, B-Boy/B-Girl (Dance) and Knowledge as the catalyst for creative, collaborative research projects rooted within hip-hop and visual culture.

VCDM 450: Multimedia Workshop: Web Design & Digital Studio
- 3 Credits. Prerequisite(s): ALL: Junior Standing. This course is designed to give the student an opportunity to explore the creative possibilities in multimedia including interactive, web design, and presentation graphics media.

VCDM 451: Advanced Topics in Multimedia, Web Design, XHTML &
CSS - 3 Credits. This course is a continuation of VCDM 450 Multimedia Workshop. This advanced course focuses on web design, hand-coding and scripting for web design, and specifically using XHTML, CSS, ActionScript and other technologies. Student will also research and produce examples of web design and/or interactive media and incorporate current trends and practices for both the internet and mobile devices.

VCDM 464: Special Topics: Virtual Production Studio - 3 Credits. Permission Only. Advanced Standing. This advanced studio course will provide students hands-on storytelling, conceptualization, virtual design and the creation of immersive experiences for entertainment such as motion capture, advanced animation, motion graphics and digital cinema production techniques, including special and visual effects as well as other topics focusing on technology, culture and diversity.

VCDM 468: Game Design and Development Project II - 3 Credits. A continuation of VCDM 368. Students work collaboratively to complete production of a final game, entertainment product and/or prototype for senior capstone, portfolio.

VCDM 470: Self Promotion & Marketing in The Arts - 3 Credits. Prerequisite(s): Junior/Senior Standing; Permission only. The course focuses on developing and expanding the students' use of technology components, skills and practices such as: the integration of video, print design and online media to create proper marketing materials to promote the student's future chosen careers in the visual and/or performing arts.

VCDM 491: Internship in Art & Visual Communication - 1 Credit.
Prerequisite(s): Junior/Senior Standing; Permission only and at least 24 credit hours (upper level) in area of concentration. This advanced internship and apprenticeship course is intended to help students in Art and VCDMA (computer graphics) make their way into the professional art, design/ multimedia, and visual communication world. The class serves as a bridge between students and professionals in the various art/design, industries, and students.

VCDM 496: 3D Animation and Modeling I - 3 Credits. this course is an
overview of 3D computer animation & modeling. Through in-class lectures, assignments, and homework, you will be instructed on how to use 3D software for basic modeling, rendering, lighting, and setup for animation. Different methods of conceptualizing characters will be discussed and illustrated. There will also be instruction in using a bitmap-based paint and illustration application to create textures. The student will also learn some basic compositing techniques and computer simulation. The students will also be exposed to how the applications are used in real-world studio situations.

VCDM 497: 3D Animation and Modeling II - 3 Credits. this course is a
continuation of VCDM 496 3D Modeling & Animation. Students are instructed and guided through advanced technique for modeling, rendering, rigging, lighting, and setup for animation. Advanced character, scene and object design as well as 3D simulation will also be covered. The course provides training in advanced compositing techniques, animation and modeling used in real-world studio situations

Additional DFPA, Communication & Other Supportive Courses

Music Technology

MUSC 230: Sound Design: Film, Animation & Game Design – 3 Credits. An introduction to the basic skills needed to produce high quality sound design for various forms of visual media and immersive experiences including animation, film and game design. The basic elements of sound design (Dialogue, Ambiences, Sound Effects, Foley, and Music) will be examined with practical assignments, class exercises, expert lectures, and peer feedback.

Theatre Arts

THEA 100: Acting (For Non-Majors) - 3 Credits. this course introduces students to the craft of acting on and off stage through theatre exercises, improvisations,and scene studies, as it develops an appreciation for acting as an art form.

THEA 441: Scene Design - 3 Credits. Prerequisite(s): Stagecraft, Lighting, Technical Production. Recommended: ART 101 Design, and ART 102-103 Drawing. Preparation of sketches based on the principal styles and periods in the theatre; balance,

composition, color, and unity of stage settings as applied to a script. Study and practice using various techniques and media stressing line, mass, color, lighting, and form.

Communications

COMM 220: Gaming Industry: Principles, Strategies and Fundamentals - 3 Credits. the focus of this course is to introduce students to the fundamental concepts ofthe gaming industry and provide historical, theoretical, and logical approaches to digital and visual gaming strategies. The students will learn various applications of streaming and digital communications technologies, the assessment of gaming audiences, the gaming industry, and an overview of game production. This course expands on gaming fundamentals, strategies, and game development with an emphasis on diversity and inclusion.

Business and Marketing

MGMT 101: Introduction To Business - 3 Credits. This is a survey course designed to acquaint students with the basic functional areas of business enterprises and covers terminology and functional issues facing managers. This course acquaints studentswith international aspects of business.

MKTG 231: Principles Of Marketing - 3 Credits this course is an introduction to the field of marketing and the issues of marketing management. Areas of study include consumer behavior, social responsibility of marketers, marketing of goods and services, industrial marketing, and logistics of distribution, pricing, product-planning and development, promotion, the selling function, and government regulations.

MKTG 341: Entertainment Marketing - 3 Credits Prerequisite MKTG 231. This is an introductory course which helps students develop a thorough understanding of the marketing concept and theories through various entertainment events. The areas this course covers include basic marketing, target marketing and segmentation, sponsorship, event marketing, promotions, sponsorship proposals, and entertainment marketing plans. This course also delves into the components of promotion plans, sponsorship proposals and the key elements needed in operating successful entertainment events.

Entrepreneurship Academy Courses

IDIS 110: Introduction To Entrepreneurship - 3 Credits Introduction to Entrepreneurship provides participants with the tools necessary for applying entrepreneurial thinking in their work and life. This course introduces participants to the fundamentals of entrepreneurship, providing them a blueprint for the ideas and strategies to build a successful venture.

IDIS 210: Problem Solving Using Design Thinking - 3 Credits this course provides an overview of design thinking to help students understand the concept as a problem-solving approach and an innovation tool. Design Thinking encompasses concept development, applied creativity, prototyping, and experimentation thinking, as it relates to understanding customers' needs.

<u>Language, Literacy and Cultural Studies</u>

ENGL 253: Studies In Popular Culture - 3 Credits Prerequisite: ENGL 102.
This course will examine and analyze popular culture and its representation in different media ranging from hip-hop music to sci-fi cinema. Specifically, the manifestations of pop culture in literature, film, television, music, and advertising will be assessed, as will the growing role of technology in the creation and understanding of culture. In addition, this course will assess the rhetorical situation of the examined texts and analyze those texts through the application of traditional rhetorical and literary methods.

ENGL 261: Gender, Culture, And Identity - 3 Credits this course is
designed to introduce students to the basic concepts and perspectives in Women's Studies/Gender Studies. This course will place the category of gender and culture at the center of analysis it is an inter-disciplinary, transnational study of the significance of gender in shaping the cultural experience of communities and individuals.

ENGL 333: Graphic Novels - 3 Credits Prerequisite(s): ENGL 102. This courseuses the analytic tools or literary theory and cultural studies to study the graphic novel andthe way in which this medium creates narrative meaning through the dynamic interplay of images and words. Students will learn the history of graphic novels and read works created domestically and internationally with special attention given to image-text relationships, form, style, and the cultural identities of characters, artists and readers.

ENGL 361: Technical And Report Writing - 3 Credits Prerequisite:
ENGL 102. This course is a study of the requirements of technical and report writing, coupled with a review and refinement of basic grammar and composition skills, designed to prepare students for career-related assignments using sophisticated software packages.

UNIVERSITY SYSTEM *of* **MARYLAND**

TOPIC: Salisbury University Proposal for Bachelor of Science degree in Coastal Engineering

COMMITTEE: Education Policy and Student Life and Safety

DATE OF COMMITTEE MEETING: December 3, 2024

SUMMARY: Salisbury University proposes a Bachelor of Science (BS) in Coastal Engineering to address the pressing regional and global challenges posed by climate change, sea-level rise, and coastal erosion. Maryland's extensive coastline, especially the Chesapeake Bay and the Eastern Shore, underscores the state's need for trained coastal engineers to sustain critical ecosystems and economies. The program will be among the few coastal engineering undergraduate degrees in the U.S., making Salisbury University a regional leader in the field. Students will receive interdisciplinary training, combining engineering principles, environmental sciences, and practical applications like erosion management and sustainable infrastructure design. The curriculum prepares graduates for the Fundamentals of Engineering exam, advancing their employability.

With coastal engineering jobs projected to grow significantly, the program addresses an unmet demand in Maryland and the Mid-Atlantic. Partnerships with local engineering firms will provide internships and practical training, enhancing hands-on learning.

Launching in 2025, the program leverages existing resources and faculty expertise, requiring minimal initial investment. Salisbury University commits to scaling faculty and infrastructure as enrollment grows. This initiative aligns with the university's strategic goals of fostering academic success and promoting sustainability, ensuring graduates are equipped to tackle environmental and economic challenges.

ALTERNATIVE(S): The Regents may not approve the program or may request further information.

FISCAL IMPACT: No additional funds are required. The program can be supported by the projected tuition and fee revenue.

CHANCELLOR'S RECOMMENDATION: That the Education Policy and Student Life and Safety Committee recommend that the Board of Regents approve the proposal from Salisbury University for a Bachelor of Science in Coastal Engineering.

COMMITTEE RECOMMENDATION:	DATE: December 3, 2024
BOARD ACTION:	DATE:
SUBMITTED BY: Alison M. Wrynn 301-445-1992	awrynn@usmd.edu

Make Tomorrow Yours

Dr. Jay A. Perman Chancellor
University System of
Maryland 3300
Metzerott Rd.
Adelphi, MD 20783

Dear Chancellor Perman,

Salisbury University (SU) is requesting the University System of Maryland's approval to add a new academic program – Bachelor of Science in Coastal Engineering.

With Maryland's unique geographical position, extensive coastline, and critical need for climate resilience and environmental stewardship, this degree program is both timely and essential for addressing emerging regional and national challenges. SU is confident that this new degree will enhance our University's contributions to the state and the nation by training professionals ready to tackle the environmental and infrastructural challenges of today and tomorrow.

The complete proposal and supporting documentation for a new academic program is attached for your review.

If you have any questions, please contact my office at 410-543-6011.

Sincerely,

Dr. Carolyn Lepre
President

cc: Dr. Candace Caraco, Associate Vice Chancellor for Academic Affairs, USM

UNIVERSITY SYSTEM OF MARYLAND INSTITUTION PROPOSAL FOR

X	New Instructional Program
	Substantial Expansion/Major Modification
	Cooperative Degree Program
X	Within Existing Resources, or
	Requiring New Resources

Salisbury University

Institution Submitting Proposal

Coastal Engineering

Title of Proposed Program

Bachelor of Science

Award to be Offered

Fall 2025

Projected Implementation Date

09240

Proposed HEGIS Code

14.2401

Proposed CIP Code

Physics Department

Department in which program will be located

Jennifer Ellis

Department Contact

410-543-6630

Contact Phone Number

jeellis@salisbury.edu

Contact E-Mail Address

Signature of President or Designee

11/15/2024

Date

A. Centrality to Institutional Mission and Planning Priorities

1. Program Description

Maryland is blessed with thousands of miles of beautiful coastlines and wetlands that are essential to the economic health of the state. Central to this is the very heart of Maryland, the Chesapeake Bay, one of the most defining assets of the state. Its watershed spans more than 64,000 square miles and is fed by more than 150 rivers and waterways. The preservation of Maryland's environmental and economic future will be shaped by coastal engineers.

Coastal engineers contribute to the establishment of infrastructure and economic development, and design solutions for environmental protection, climate change adaptation, disaster preparedness, reclamation, and sustainability. Climate change has brought a host of weather-related challenges to coastal areas and beyond, including sea level rise, hurricanes, storm tides and high-wave events, erosion, and damage to harbors. These challenges impact the health and safety of residents, trade, recreation economies, and our delicate coastal ecosystem. Coastal engineers bring critical thinking, mathematic and scientific principles, and design and control methods to combat the negative impacts of such events.

Today's coastal engineers are trained to mitigate the impacts of storm tides through wind-wave forecasting and the design of wave transformation structures and practices. Their understanding of beach dynamics, levee and harbor design, dredging processes, and erosion control through the manipulation of living shorelines, structural, and non-structural means protects the population from natural disasters and keeps tourist economies well-functioning.

The field of coastal engineering is burgeoning. With only a few academic programs across the nation, the demand for coastal engineers is projected to grow faster than average. According to data from the National Association of Colleges and Employers (NACE), a degree in coastal engineering is highly employable, offering graduates numerous opportunities in coastal and engineering related career fields. The U.S. Bureau of Labor reports an expected 8% growth in demand in the next 10 years, and expects an average of 900 openings each year in government agencies (e.g., Army Corps of Engineers, NOAA), consulting, and private firms. Even greater growth is projected in regions vulnerable to coastal hazards, like the mid-Atlantic region. As referenced in Appendix D, engineering firms across the state confirm a dire need for coastal engineers in Maryland, especially on the Eastern Shore and Chesapeake Bay regions. Edmates projects that the greatest demand nationwide in the next 10 years will be related to environmental consulting and advocacy, stormwater management, green coastal research and development, coastal and estuarine restoration, coastal construction and monitoring of coastal structures, and climate resilient infrastructure – all workforce demands that have been confirmed by engineering firms in our state. Salaries are expected to vary by educational level, but in 2023 the median pay for new coastal engineers was $100,270 at the bachelor's level. Ten-year projections suggest that salaries of $150,000/year will be common among starting coastal engineers within a few years.

Expecting a significant increase in demand for college graduates capable of tackling the challenges surrounding coastal infrastructure and climate change, **Salisbury University** is proposing the formation of a Coastal Engineering degree (B.S.). This innovative degree would transition an existing track in physics to a standalone degree, one of only a few in the

country. Of the 66 institutions examined in the Maryland, Virginia, Delaware region, there are only four options for students interested in the topic, all of which are tracks situated within broader ocean engineering or civil engineering programs. This leaves a significant gap in the pipeline for technically trained professionals. While there are no existing bachelor degree options in the region, several coastal engineering graduate programs exist regionally and nationally.

Based on Maryland's extensive coastline, lack of existing programs, and opportunities for graduates, there is a compelling opportunity for SU to leverage its strengths in sustainability and geography while filling a need for this fast-growing field.

Salisbury University is perfectly positioned to lead Maryland's education of coastal engineers. Adjacent to both the Chesapeake Bay to the west, and Maryland's five inland bays to the east, the University is geographically poised to address the unique coastal challenges and opportunities of the state. With immediate access to incredibly diverse waterways, SU is able to provide hands-on educational opportunities to students.

This distinctive degree program provides a rigorous technical background and experience to enable graduates to swiftly enter emerging roles in consulting, local, state, and federal government, and cutting-edge research. The proposed Coastal Engineering B.S. curriculum includes foundational courses in mathematics, physics, and earth sciences, as well as specialized courses in coastal engineering. Situated within the Department of Physics, the program leverages the University's expansive expertise in geosciences, geographic information systems, physics, and engineering, while also drawing on the regional and geographic distinction of coastal Maryland.

The B.S. in Coastal Engineering provides students the fundamentals to adequately prepare for the National Council of Examiners for Engineering and Surveying (NCEES) Fundamentals of Engineering (FE) exam, which is a prerequisite for engineering licensure. Passing the FE exam prior to graduation can lead to more early-career opportunities for advancement, and helps differentiate engineering graduates from their peers. Once completed, records are kept by the Maryland Board of Professional Engineers and are valid across all states. Passing the FE exam allows a graduate to be listed in the Maryland Board of Professional Engineers database of Engineers-in-Training (EITs), which is searchable by companies seeking an entry level engineer. Passing the FE exam verifies the graduate's aptitude for advanced engineering work and eventual professional licensure. The B.S. in Coastal Engineering will be available to students beginning in August 2025.

2. **How Proposed Program Supports Institution's Strategic Goals**

The B.S. Coastal Engineering program aligns with two of Salisbury University's strategic plan goals:

Goal 1: Enrich Academic Success and Student Development; Objective 1.1 – Continue to support and develop our wide range of exceptional and challenging academic programs and experiences.

Coastal engineering is an inherently interdisciplinary and challenging field, encompassing elements of civil engineering, environmental science, oceanography, and climatology. By offering this program, SU will provide students with a unique academic path of rigorous coursework and practical applications like managing coastal erosion, designing resilient coastal infrastructure, and protecting natural habitats. Students will engage in real-world problem-solving and hands-on learning through labs, field studies, and internships, enriching their educational experiences and preparing them for impactful careers in a growing field.

Goal 5: Enhance Environmental, Social and Economic Sustainability; Objective 5.1 – Serve as a leader in our region in providing educational opportunities that enhance social, environmental and economic sustainability.

The coastal engineering program positions SU as a regional leader in environmental sustainability. Through coursework focused on sustainable coastal management, students will learn how to mitigate climate change impacts, address rising sea levels, and support sustainable development along Maryland's coastlines. The program's emphasis on sustainable engineering practices aligns with the region's need for professionals who can balance ecological preservation with economic development. Graduates of this program are equipped to influence policies, design eco-friendly infrastructure, and contribute to sustainable regional growth, thereby enhancing both the environmental and economic resilience of our coastal communities.

By offering a coastal engineering degree, SU will support academic and professional growth for its students but also strengthen its role as a key contributor to environmental sustainability in Maryland and beyond.

While its administrative home will be in the Henson School of Science and Technology's Physics Department, the program utilizes a multi-disciplinary approach allowing students to pursue "a broad array of ideas and perspectives" within the field of coastal engineering as promoted in the University's mission. This approach will help students achieve excellence, envision their future as engineers, grow intellectually, and pursue career, leadership, and graduate school opportunities.

3. **Brief Narrative Describing Adequate Financing of Program**

The coastal engineering program incorporates mostly existing courses at SU and will use existing faculty and their expertise to launch the new undergraduate degree, with funding coming from tuition and course fees. As the B.S. Coastal Engineering program grows, new resources will be required for program's success. As our first cohort of students near completion of the program, it is expected that two additional faculty members, each with expertise in coastal engineering, will be required; however, the program will monitor the rate of growth to determine if and when those positions are needed. SU's faculty will largely be able to offer the courses as part of their regular teaching load; therefore, no additional administrative support or increased funding will be needed at the start of the program. Like all programs, students in coastal engineering will be supported by SU's Academic Advising Center, which is

expected to manage the additional student load. If the program grows significantly, more advising support would be necessary, and faculty may advise advanced students.

As the program continues to grow, we may need additional field equipment and space to support hands-on laboratory experiences. With the completion of Blackwell Hall, we expect on-campus space to become available, reducing any potential limitations if further space is needed. The program also will utilize internships with local engineering firms to provide hands-on training for our students. These partnerships will not require resources; however, several firms have expressed that they may be able to provide paid internships in support of our students and program.

4. Commitment to Adequate Continued Support

The program is expected to attract a new set of students who are interested in coastal engineering and pursuing careers which require engineering licensure. The uniqueness of the program will draw students from across the state and beyond. SU is committed to providing additional administrative, financial, and technical support to match the increase in student demand, and advanced computing, equipment, and space needs will be provided in support of the program as needed.

The SU Libraries, the SU Math Emporium and Physics Help Desk will provide academic support for students in the program. The Physics Department has several labs for courses, as well as research space that can be used for students and faculty alike in the program.

The University has established administrative structures to support the program, as demonstrated by SU's thorough vetting and approval process involving the Program Director, Chair of the Department, Henson School Curriculum Committee, Undergraduate Curriculum Committee, Dean of the Henson School, and the Provost. We pledge to provide the appropriate support to enable all students enrolled in the program to complete their degree. The University has implemented a robust framework to ensure continued support for the academic program, including enhanced resources, dedicated mentorship, and regular feedback mechanisms.

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

1 and 2. Demonstrate Demand and Need for the Program and Consistency with the Maryland State Plan for Postsecondary Education

Coastal engineering is a fast-growing field that responds to critical economic and environmental demands facing our society. In alignment with the State Plan for Postsecondary Education, this program is responsive to the changing needs of the workforce and promotes innovation as it prepares our students to become leaders addressing environmental challenges of the coming years. Locally, the Maryland Coastal Bays watershed alone contributes more than $1.2 billion in annual economic activity and more than 50,000 jobs each year. Coastal tourism at Maryland's beaches is thought to have a total economic impact of more than $30.3 billion annually for the state. Even more significant is the economic driver of the Chesapeake

Bay. A 2014 study from the Chesapeake Bay Foundation attributes $107 billion in economic impact is created by the Chesapeake Bay, with billions of dollars more that could be gained or lost depending on the health and sustainment of our watershed,

To protect these critical resources for the future of Maryland, and with the Maryland Transportation Authority considering the replacement of the Chesapeake Bay Bridge with two new and wider bridges, a steady supply of well-trained coastal engineers will be an absolute requirement. SU's coastal engineering program demonstrates further alignment with the State Plan, which sets a goals of connecting Marylanders to jobs, creating a competitive economy, and making Maryland the greenest state in the country.

The Eastern Shore of Maryland, in particular, with its extensive coastline and vulnerable ecosystems, is in urgent need of skilled professionals to address challenges such as erosion, sea-level rise, and increased storm intensity. As of the date of this proposal, there are numerous coastal engineering job opportunities available: 142 on LinkedIn, 413 on ZipRecruiter, 78 on Indeed, 344 on SimplyHired, and 83 on Glassdoor. This underscores the growing demand for expertise in this field and highlights the necessity of a robust coastal engineering program to prepare students for these roles.

The State expects its postsecondary institutions to "update academic programs to meet industry needs and ensure a quality workforce," as indicated in Goal #1, Priority #5 of the 2022 Maryland State Plan for Higher Education. The B.S. Coastal Engineering degree will advance this goal by providing a unique high-quality program that meets "occupational and professional needs relative to upgrading vocational/technical skills or meeting job market requirements." As previously reference, several firms on the Eastern Shore and beyond have documented this need and expressed their support for the program (see Appendix D). The program prepares students to be effective engineers who can be competitive in an area of expanding demand.

C. Quantifiable and Reliable Evidence and Documentation of Market Supply and Demand in the Region and State

Data USA and a recent report by the National Academies Press (1 National Importance of Coastal Engineering | Meeting Research and Education Needs in Coastal Engineering | The National Academies Press) estimates that there are fewer than 200 bachelor's level graduates in coastal or ocean engineering each year.

According to the Maryland Department of Labor and the U.S. Bureau of Labor Statistics occupational projections, growth in jobs closely related to coastal engineering is expected to rise considerably at both the state and national level by 2033.

Maryland Department of Labor: Maryland Long Term Occupational Projections (2022-2032)		
Title	**Projected Change**	**Projected Annual Openings**
Environmental Engineer	10.7%	693
Environmental Science & Protection	10.8%	832
Environmental Scientists & Specialist	11.9%	2,591
Marine Engineering & Naval Architecture	3%	446
Urban & Regional Planners	9%	871

U.S. Bureau of Labor Statistics: Occupational Outlook Handbook (2023-2033)		
Title	**Projected Change**	**Projected Annual Openings**
Environmental Engineer	7%	44,200
Environmental Science & Protection	7%	36,300
Environmental Scientists & Specialist	7%	90,700
Marine Engineering & Naval Architecture	8%	10,900
Urban & Regional Planners	4%	47,200

In Maryland and beyond, there is a general shortage of engineers, and coastal engineers (who are trained in basic engineering principles as well as coastal-specific applications), can fill jobs outside of the coastal engineering demand, as well. Upon graduation, a student with this major will be able to apply for both entry-level engineer or coastal engineering positions. Approximately 40% of the jobs listed seeking "engineering" ask for a bachelor's degree as a requirement. The remaining 60% generally require an advanced degree or "a bachelor's degree plus equivalent work experience." There is also significant overlap between coastal engineering and military occupational classifications. According to the U.S. Bureau of Labor Statistics, marine/coastal engineering is a skillset of 35 military titles.

D. Reasonableness of program duplication

We find no evidence of program duplication at the state or regional level. Salisbury University is one of only two USM institutions that serve the residents of the Eastern Shore of Maryland and the other, the University of Maryland Eastern Shore, does not offer an undergraduate degree in coastal engineering. Additionally, coastal engineering is not a degree title shared by any institution of higher education, public or private, in the State of Maryland. The CIP Code tied to this proposal (14.2401) for "Ocean Engineering" is also not a code used by any institution of higher education, public or private, in the State of Maryland.

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

There are no HBIs in Maryland that offer an undergraduate degree in coastal engineering, or use the same CIP Code as this proposal. As such, while Salisbury University believes this is a

high-demand program for the State of Maryland and its workforce needs, it does not believe coastal engineering is a high-demand program for HBIs specifically. In cases where HBIs in the state are offering engineering programs, they have focused on mechanical, aerospace, or general civil engineering specialties. None have specific coursework in coastal, ocean, or maritime engineering, the closest to our proposed program.

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

There are no HBIs in Maryland that offer an undergraduate degree in coastal engineering, or use the same CIP Code as this proposal, which suggests there is not a clear, unique relevance of this program to the identity of our state's HBIs. Additionally, there are not any HBIs in neighboring states across the mid-Atlantic with an undergraduate program in coastal engineering, further suggesting the program does not have particular significant relevance to the identity of HBIs beyond the State of Maryland.

G. Adequacy of curriculum design and delivery to related learning outcomes

1. How the Proposed Program was Established; Faculty Oversight

A full course listing with course titles and descriptions is provided in Appendix A. These courses were chosen by the faculty in the Department of Physics to address stated needs of industry partners in coastal engineering. The unique design of this program combines a breadth of knowledge developed from a group of fundamental and specialized coastal engineering courses combined with courses in mathematics, physics, and other science disciplines. By integrating the specific science disciplines, students in the program will better develop an array of critical thinking, communication, and leadership aptitudes that are broadly applicable in a rapidly changing technological environment and interdependent society.

The Coastal Engineering program will be housed in the Henson School of Science and Technology's Physics Department and will generally be managed by the Physics Department's Engineering Coordinator. The chairs of departments with course offerings in the coastal engineering curriculum will be consulted as necessary: Dr. Matthew Bailey, Physics; Dr. Stephen Habay, Chemistry; Dr. Veera Holdai, Mathematics; Dr. Dan Harris, Geography and Geosciences. The B.S. Coastal Engineering program requires 43 credits of general education courses, 15 of which are fulfilled in the core courses, 59 credits of engineering core courses, 27 credits of required major courses, and 6 credits of electives.

2. Educational Objectives and Learning Outcomes

The B.S. Coastal Engineering program follows a student-centered learning approach that is the hallmark of Salisbury University and focuses on principles, models and techniques that engineers use to perform their jobs effectively and support a broad array of applications.

Program objectives for graduates of the B.S. in Coastal Engineering are: 1) demonstrate the knowledge and skills central to the field of coastal engineering; 2) use formal techniques and methodologies of abstraction to create methods to solve real-world problems; 3) apply

acquired knowledge to cross-disciplinary problems as part of a project team; and 4) effectively and competitively pursue careers to meet the growing demand for engineers.

3.   Assessment and Documentation of Student Learning Outcomes
Course- and program-level outcomes will be reviewed annually for effectiveness using objective criteria. SU's University Analysis, Reporting and Assessment (UARA) provides official student data and facilitates the collection and presentation of data for Academic Program Reports (APR) on a seven-year cycle. These APRs formalize the assessment of student learning outcomes to drive programmatic decision-making. At the end of each academic year, the program will assess the extent to which learning outcomes are achieved by each student in the program. Modifications to classes or other adjustments may be made in response to areas where learning outcomes are not consistently achieved.

4. List of Courses with Credit Hours and Course Descriptions

Summary of Overall Credits to Degree
General education (not fulfilled by major) – 28
credits Engineering core – 59 credits
Coastal Engineering Major – 27 credits
Electives – 6 credits

Curriculum:
Engineering Core Courses
(Required courses include the following - see Appendix A for course descriptions).

CHEM 121 – General Chemistry I (4)
ENGR 100 – Introduction to Engineering Design (3) ENGR 110 – Statics (3)
ENGR 220 – Mechanics of Materials (3) ENGR 221 – Dynamics (3)
ENGR 232 – Thermodynamics (3)
ENGR 331 – Fluid Mechanics (3)
ENGR 480 – Fundamentals of Engineering Review (2)
ENGR 490 – Research in Engineering (3)

MATH 201 – Calculus I (4)
MATH 202 – Calculus II (4)
MATH 310 – Calculus III (4)
MATH 306 – Linear Algebra (4)
MATH 311 – Differential Equations I (4)

PHYS 221 – Physics I (4)
PHYS 223 – Physics II (4)
PHYS 225 – Physics III (3)
PHYS 470 – Senior Seminar (1)

Coastal Engineering Major Courses

(Required courses include the following - see Appendix A for course descriptions).

ENGR 306 – Introduction to MATLAB (1)
ENGR 411 – Introduction to Coastal Engineering (3)
ENGR 412 – Coastal Structures and Beach Nourishment (3)
ENGR 413 – Coastal Renewable Energies (3)
ENGR 414 – Field Methods and Coastal Modeling (3)
GEOG 111 – Introduction to Oceans and Coasts (3)
GEOG 311 – Coastal Processes (3)
GEOL 103 – Introduction to Physical Geology (4)
GEOL 211 – Sediment Analysis (1)
GEOL 322 – Geological Oceanography (3)

Total Credits (Core + Major)_____86 credit hours

General Education Courses

SU Signature Outcomes: Must complete at least 3 credits in each of the following areas:
· Civic and Community Engagement

· Diversity and Inclusion
· Environmental Sustainability

First Year Seminar: Academic preparation, skills and expectations for educational and professional success through exploration of a topic or issue. SLOs: Critical Thinking and Reasoning, Effective Reading, Information Literacy, Oral Communication, Written Communication, Intellectual Curiosity

Communicating Through Writing: Effective reading, writing, and information usage. SLOs: Effective Reading, Information Literacy, Written Communication

Quantitative Analysis: Numerical, analytical, statistical, and problem-solving skills. Fulfilled by Major SLOs: Quantitative Reasoning

Human Expression: Exploration of the different ways individuals and societies have and continue to express themselves and communicate the human experience. SLOs: Knowledge of Human Experience, Intellectual Curiosity, Ethical Reasoning

Humanity in Context: Critical and comparative analysis of humanity, emphasizing the role of history, culture, and/or language in human issues. SLOs: Critical Thinking and Reasoning, Understanding the Human World, Effective Reading, Knowledge of Human Experience, Intercultural Competence

Social Configurations: Quantitative and/or qualitative analysis of human behavior and/or societies. SLOs: Understanding the Human World, Knowledge of Human Experience, Emerging and Enduring Global Issues, Intercultural Competence

Social Issues: Applied social science, with an emphasis on understanding and solving problems in the social or behavioral sciences. SLOs: Quantitative Reasoning, Knowledge of Human Experience, Emerging and Enduring Global Issues, Ethical Reasoning

Hands-on Science: Experiential laboratory-based science. Fulfilled by Major SLOs: Quantitative Reasoning, Scientific Reasoning, Knowledge of the Physical World

Solutions Through Science: Applied science, with an emphasis on understanding and solving problems in the natural, physical, and technological sciences (may or may not include a lab). Fulfilled by Major SLOs: Critical Thinking & Reasoning, Quantitative Reasoning, Scientific Reasoning

Personal Wellness: Interconnected dimensions of wellness, including physical, emotional, and financial, to live a healthy, successful life. SLOs: Personal Health and Wellness

Experiential Learning: Apply knowledge and competencies from General Education through internship, study abroad/away, research, senior project, or other relevant experience. Fulfilled by Major SLOs: Critical Thinking and Reasoning, Information Literacy, Oral Communication, Written Communication, Ethical Reasoning, Intellectual Curiosity

Total Credits _____ 43 credit hours

5. Specialized accreditation or graduate certification requirements

There are no specialized accreditation or graduate certification requirements for this program. However, it is possible to seek accreditation from ABET once the first cohort of students successfully completes the program. We plan to seek this accreditation in the future.

6. Contracting with another institution or non-collegiate organization

There are no contracts with other institutions or organizations. Once the program is established, we plan to explore preferred pathway MOUs to graduate programs with institutions that have coastal or civil engineering master's or doctoral programs.

7. Assurance that SU provides clear, complete and timely information to students

Salisbury University, the Henson School, and the Physics Department are committed to and will provide clear, complete and timely information pertinent to all coastal engineering students through official communication channels. Upon approval, the program's academic requirements are clearly articulated on designated program pages that are located with the

university's catalog. Each undergraduate program provides students with a Curriculum Guide, a suggested 4-year course of study that is easily accessible within the program page (see Appendix B). Students will have access to degree audits that are located in their student portal within Peoplesoft. Additionally, students will have access to professional academic advisors who will support the student in academic support.

Each course offered within the program will provide the student with a syllabus that outlines the expectations for faculty/student interaction, technical equipment requirements, and the learning management system. In addition, approval of the program will be communicated in a timely manner to the appropriate offices on campus. Information regarding financial aid resources and cost of payments policies are clearly communicated on the Accounts Receivable & Cashiers Office and Office of Financial Aid & Scholarships' webpages.

The Academic Advising Center prepares all advisors to assist incoming students with all academic programs; furthermore, the Academic Advising Center dedicates one of their advisors as a liaison to the Department of Physics, the home of the proposed degree. Our catalog and website make available all pertinent information to prospective and current students regarding academic and student support, SU's learning management system, financial aid resources and costs and payment policies.

Before any program opens for admission, SU updates all curricular, course and degree requirements in our catalog and online (in both narrative and checklist formats). The Academic Advising Center prepares all advisors to assist incoming students with all academic programs; furthermore, the Academic Advising Center dedicates one of their advisors as a liaison to the Department of Physics, the home of the proposed degree. Our catalog and website make available all pertinent information to prospective and current students regarding academic and student support, SU's learning management system, financial aid resources and costs and payment policies.

8. Assurance that advertising, recruiting and admission material are clear and accurate

All publications, including marketing, catalog and website admissions pages are vetted by the Marketing and Communications Department at SU, which fact-checks all submissions. Digital marketing, which will be a main strategy for marketing this program, also will rely on the presentation of facts and stories that are concise and accurate.

H. Adequacy of Articulation

Once the new program in coastal engineering is approved, Salisbury University will move forward with the execution of an articulation agreement (See Appendix C).

I. Adequacy of Faculty Resources as outlined in COMAR 13B.02.03.11.

1. <u>Narrative of Faculty Demonstrating Quality of Program Faculty</u>

The science, mathematics, and engineering courses will be taught by SU's faculty from the Henson School of Science and Technology. Collectively, these faculty have decades of experience teaching undergraduates.

Table of Faculty Resources. (note: all faculty are regular state employees, not contractual)

	Faculty Member	Terminal Degree	Field	Degree-granting Institution	Academic Rank	Full- or Part- Time	Courses overseen
Chemistry	Stephen Habay	Ph.D.	Chemistry	Univ of Pittsburgh	Professor and Chair of Chemistry	FT	CHEM 121
Geography and Geosciences	Daniel Harris	Ph.D.	Geoscience Education	Univ of Maryland College Park	Associate Professor and Chair of Geography/ Geosciences	FT	All GEOG and GEOL courses
Mathematics	Veera Holdai	Ph.D.	Mathematics and Statistics	Wayne State Univ	Professor and Chair of Mathematics	FT	All MATH courses
Physics	Matthew Bailey	Ph.D.	Physics	Utah State Univ	Associate Professor and Chair of Physics	FT	All ENGR and PHYS courses
Physics	Mark W. Muller	Ph.D.	Mechanical Engineer-ing (Grad. Cert. Coastal Engineering)	Univ of Hawai'i (Old Dominion Univ)	Professor	FT	Program Coordinator

- <u>2. Demonstrate Pedagogical Training for Faculty</u>

The Center for the Advancement of Faculty Excellence (CAFE) supports faculty in the areas of teaching, research, professional development and personal wellness and the office of Instructional Design & Delivery (ID&D) provides professional development for effective pedagogical practices and instructional support for faculty engaged in teaching and learning of online, hybrid and traditional courses. Collaboratively, these offices provide various webinars, workshops, faculty learning communities and initiatives around andragogical and pedagogical best practices (such as Universal Design for Learning; Diversity, Equity & Inclusion; High Impact Practices; Problem-Based Learning; Open Pedagogy, Open Educational Resources, etc.). Additional opportunities are provided through the Faculty Development Committee and our Faculty Learning Communities such as the Distance Education FLC and the Scholarship of Teaching and Learning FLC. Finally, the institution hosts two annual faculty development events – one in August at the beginning of the semester (our most recent focused on Effective Teaching Strategies) and a Teaching & Learning conference in the Spring where faculty present on evidence-based practices and their experiences at SU. ID&D provides support for the campus learning management system (Canvas) and other instructional software (such as lecture capture, audience response systems) through workshops, video tips, and how-to instructions

J.   Adequacy of Library Resources as outlined in COMAR 13B.02.03.12.

Salisbury University Libraries have existing resources to support the new Coastal Engineering major. In relation to journal and newspaper articles, SU has a number of relevant titles through electronic access via our online database subscriptions, including (but not limited to): Academic Search Complete; Business Source Premier; EconLit; JSTOR; ProQuest Newspapers; Science Direct; and Web of Science. In regard to monographic titles, SU has a significant number of titles that would support this major and is frequently adding more. In regard to monographic titles, SU has a significant number of titles that would support this major and is frequently adding more. SU's online catalog provides direct access and borrowing privileges to approximately eleven million items in the libraries of the University System of Maryland and Affiliated Institution libraries (USMAI). In sum, no new library resources are directly required to support the new program. Active and ongoing communication from faculty teaching these courses regarding relevant resources is strongly recommended, with particular emphasis placed on areas of curricular focus along with information regarding newly released titles. In sum, no new library resources are directly required to support the Coastal Engineering major.

K.   Adequacy of Physical Facilities, Infrastructure and Instructional Resources as outlined in COMAR 13B.02.03.13.

Currently, SU can deliver the program in our existing space and with the current equipment resources. We anticipate approximately 8 students will enroll in the program in its first year, 10 new students in Year 2, and 15 new students a year going forward, yielding a total program headcount at maturity of about 45 students, with about 9 graduates per year. We predict an 82% first year retention rate,

equivalent to the industry average for engineering programs. At that rate of growth, we would need additional adjunct/contractual teaching support in Years 2 and 3 and then 1 additional professor in Year 4 to handle the volume of students. This will allow SU to maintain the ratio of about 30 students per full-time faculty member. SU is committed to upgrading facilities and equipment when the program has established its intended growth.

SU has an institutional electronic mailing system. All students and faculty are given an SU email to utilize for all university correspondence. The university's IT HelpDesk provides technical support to students who need assistance accessing e-mail.

Instructional Design & Delivery provides support for the campus supported learning management system (Canvas) and other instructional software (such as lecture capture, audience response system) through various methods (e.g. workshops, video tips, how-to instructions).

Salisbury University's Department of Physics and Department of Geography and Geosciences have adequate laboratory facilities to support the new program. This includes wet and dry labs on the 1st and 3rd floor of Henson Science Hall, a coastal processes and geology research lab in the basement of Devilbiss Hall, and field experience launch spaces at the Nanticoke River Center.

L. Adequacy of Financial Resources as outlined in COMAR 13B.02.03.14.

TABLE 1: RESOURCES for the Coastal Engineering B.S. at Salisbury University					
Resources Categories	(Year 1 - FY25)	(Year 2 - FY26)	(Year 3 - FY27)	(Year 4 - FY28)	(Year 5 - FY29)
1.Reallocated Funds	$0	$0	$0	$0	$0
2. Tuition/Fee Revenue (c+g below)	$85,104	$184,467	$317,062	$447,567	$514,100
a. #F.T. Students	8	17	28	39	44
b. Annual Tuition/Fee Rate (FY23 Resident rate)*	$10,638	$10,851	$11,068	$11,289	$11,515
c. Annual Full Time Revenue (a x b)	$85,104	$184,467	$309,904	$440,271	$506,660
d. # Part Time Students	0	0	1	1	1
e. Credit Hour Rate*	$430	$439	$447	$456	$465
f. Annual Credit Hours	16	16	16	16	16
g. Total Part Time Revenue (d x e x f)	$0	$0	$7,158	$7,296	$7,440
3. Grants, Contracts, & Other External Sources	$0	$0	$0	$0	$0
4. Other Sources	$0	$0	$0	$0	$0
TOTAL (Add 1 - 4)	$85,104	$184,467	$317,062	$447,567	$514,100

*Figured with a 2% Annual Increase

TABLE 2: EXPENDITURES – for the Coastal Engineering B.S. at Salisbury University					
Expenditure Categories	(Year 1 - FY25)	(Year 2 - FY26)	(Year 3 - FY27)	(Year 4 - FY28)	(Year 5 - FY29)
1. Total Faculty Expenses (b + c below)	$34,949	$75,753	$135,193	$188,893	$216,315
a. # FTE	0.2	0.5	0.9	1.2	1.4
b. Total Salary (plus 2% increase each year)	$26,278	$56,957	$101,649	$142,025	$162,643
c. Total Benefits (33% of salary)	$8,672	$18,796	$33,544	$46,868	$53,672
2. Total Administrative Staff Expenses (b + c below)	$19,950	$20,349	$20,756	$21,171	$21,595
a. # FTE	0.125	0.125	0.125	0.125	0.125
b. Total Salary	$15,000	$15,300	$15,606	$15,918	$16,236
c. Total Benefits	$4,950	$5,049	$5,150	$5,253	$5,358
3. Total Support Staff Expenses (b + c below)	$3,192	$6,919	$12,038	$16,937	$19,435
a. # FTE	0.05	0.11	0.19	0.27	0.30
b. Total Salary	$2,400	$5,202	$9,051	$12,734	$14,613
c. Total Benefits	$792	$1,717	$2,987	$4,202	$4,822
4. Equipment	$0	$80,000	$0	$0	$0
5. Library	$0	$0	$0	$0	$0
6. New or Renovated Space	$0	$0	$0	$0	$0
7. Other Expenses	$0	$0	$0	$0	$0
TOTAL (Add 1 - 7)	$58,091	$183,021	$167,987	$227,001	$257,345

M. Adequacy of provisions for evaluation of program as outlined in COMAR 13B.02.03.15.

The Henson School of Science and Technology has a long tradition of assessment and accreditation. Within the Henson School's Departments of Mathematics and Computer Science, Biological Sciences, Geography and Geosciences, Chemistry, and Physics, all faculty members are evaluated every year by their department chairs and degree programs undergo comprehensive review every 7 years. With guidance from the SU's Office of University Analysis, Reporting, and Assessment, course and program-based assessments are being developed at the start. Thus, the curriculum, program faculty and other resources, and student learning outcomes will be routinely evaluated through the annual and periodic review assessment cycles. In addition, once the B.S. Coastal Engineering program is launched, the program and courses will be evaluated using student surveys and program committee reviews on a regular basis. The program plans to see ABET accreditation after its initial launch which will require continuous assessment and evaluation.

N. Consistency with the State's minority student achievement goals as outlined in COMAR 13B.02.03.05 and in the State Plan for Postsecondary Education.

Any student meeting the SU admissions requirements can choose to pursue the B.S. in Coastal Engineering. The program will work to help all accepted students improve their workplace competitiveness and reach their professional goals; an aim consistent with the State's minority student achievement goals. In support of this goal, SU focuses campus efforts to promote inclusion, diversity, opportunity, and equity, and the cultivation of a sense of belonging. Recruiting a more racially diverse class, both at the undergraduate and graduate levels, is important for SU's student body to better represent the population within Maryland. We plan to measure our progress toward these goals through enrollment and retention analyses for matriculated students.

More specifically, Priority 6 of the 2022 Maryland State Plan for Higher Education calls on universities to improve systems that prevent timely completion of an academic program. We have already positively communicated with several Maryland community colleges about the potential for developing articulation agreements between their pre-engineering transfer programs and our B.S. Coastal Engineering program. In fact, the agreement already in place with Wor-Wic Community College will form the base document upon which these agreements can be drawn up quite quickly. Guided and facilitated by the Transfer with Success Act, these articulation agreements will certainly improve student degree completion for minority students and majority students alike.

O. Relationship to low productivity programs identified by the Commission:

The proposed program is not directly related to an identified low productivity program.

P. Adequacy of Distance Education Programs as outlined in COMAR 13B.02.03.22:

No distance learning is proposed at this time.

Appendix A

**B.S. Coastal Engineering -
Salisbury University Course
Descriptions**

Major Courses

CHEM 121 - GENERAL CHEMISTRY I (4 credit hours)
Study of fundamental laws of chemistry and atomic structure emphasizing quantitative relationships. Prerequisite: Two years high school algebra and chemistry, or CHEM 100. Three hours lecture, one three-hour laboratory per week. Prerequisites: This course assumes an understanding of high school chemistry and algebra.

ENGR 100 - INTRODUCTION TO ENGINEERING DESIGN (3 credit hours)
Introduction to the art and science of engineering design. Students work in teams to design, manufacture, assemble and test a product. Examples of products include a postal scale, solar cooker and human-powered water pumping systems. CAD and modeling software will also be used.
Four hours lecture/ activity per week. Pre or Corequisites ENGL 103 and either PHYS 121 or PHYS 221.

ENGR 110 - STATICS (3 credit hours)
The equilibrium of stationary bodies under the influence of various kinds of forces. Forces, moments, couples, equilibrium, trusses, frames and machines, centroids, moment of inertia, beams and friction. Vector and scalar methods used to solve problems. Prerequisite: PHYS 221. Prerequisite/Corequisite: MATH 202. Three hours per week.

ENGR 220 - MECHANICS OF MATERIALS (3 credit hours)
Study stress and deformation of beams, shafts, columns, tanks and other structural, machine and vehicle members. Topics include stress transformation using Mohr's circle, centroids and moments of inertia, shear and bending moment diagrams, derivation of elastic curves, and Euler's buckling formula. Complete design project related to the material.
Three hours per week. Prerequisites: ENGR 110, MATH 202.

ENGR 221 – DYNAMICS (3 credit hours)
Systems of heavy particles and rigid bodies at rest and in motion. Force acceleration, work energy and impulse momentum relationships. Motion of one body relative to another in a plane and in space.
Three hours per week. Prerequisites: ENGR 110, MATH 202.

ENGR 232 – THERMODYNAMICS (3 credit hours)
Introduction to the principles of thermodynamics and thermodynamic properties of matter.
Topics include the first and second laws of thermodynamics, heat, work, temperature,
entropy, enthalpy, cycles, reactions, mixtures, energy balances, and mass balances. A design
project related to the material is given.
Three hours per week. Prerequisites: C or better in ENGR 110, MATH 202, PHYS 225.

ENGR 306 - INTRODUCTION TO MATLAB (1 credit hour)
Prepares physics and engineering students for subsequent courses requiring computation
with MATLAB. Covers the basics of MATLAB, including simple commands, variables,
solving equations, graphing differentiation and integration, matrices and vectors, functions,
M-files and fundamentals of programming in the MATLAB environment.
One hour per week. Prerequisites: C or better in MATH 202.

ENGR 331 - FLUID MECHANICS (3 credit hours)
Introduction to the principles of fluid mechanics. Topics include mass, momentum and
energy conservation, hydrostatics, control volume analysis, internal and external flow,
boundary layers, and modern measurement techniques. A design project related to the
material is given.
Four hours lecture/activity per week. Prerequisites: C or better in ENGR 221, MATH 310 and
PHYS 225.

ENGR 411 - INTRODUCTION TO COASTAL ENGINEERING (3 credit hours)
Topics include the physical and mathematical fundamentals of ocean wave behavior;
mechanics of wave motion; wave refraction, diffraction and reflection; wave forecasting;
shore processes; planning of coastal engineering projects; design of seawalls, breakwaters,
beach nourishment, and fixed and floating installations; dredging; sea-level rise; coastal
transport processes; and risk analysis. Three hours per week. Prerequisites: C or better in
GEOG 311, PHYS 225.

ENGR 412 – COASTAL STRUCTURES AND BEACH NOURISHMENT (3 credit hours)
This course examines the elements of beach nourishment and coastal structures including
cross-shore and planform design considerations. Topics include dredging, borrow areas
(upland, offshore and inlets), environmental and recreational effects of beach nourishment.
Students will learn about the functional design of coastal structures distinguishing between
groins, jetties, seawalls, breakwaters, revetments and bulkheads.
Sediment and structural stability as a result of breaking and non-breaking wave loading
are also covered. Three hours per week. Prerequisites: ENGR 411

ENGR 413 – COASTAL RENEWABLE ENERGIES (3 credit hours)
This course examines power generation from ocean waves, currents, tides, and temperature changes in coastal environments. Topics include an emphasis on the principles of operation, efficiency, environmental impact and performance of coastal renewable energy sources from an electrical engineering and thermodynamic perspective. Environmental impacts and technological limitations are also discussed.
Three hours per week. Prerequisites: ENGR 232, ENGR 411, and PHYS 311.

ENGR 414 – FIELD METHODS AND COASTAL MODELING (3 credit hours)
Introduction to the concepts, instrumentation, and field methods used to observe and computationally model physical processes specific to the highly dynamic coastal environment, such as wind, waves, currents, tides, and sediment transport. Advanced surveying techniques for monitoring beach morphology (e.g., LIDAR, RTK, GPS, and SONAR) and advanced numerical models (e.g. ADCIRC, FUNWAVE, DELFT3D, XBeach, and ANSYS) are introduced.
Three hours per week. Prerequisites: ENGR 411

ENGR 480 - FUNDAMENTALS OF ENGINEERING REVIEW (2 credit hours)
Review of topics on the National Council of Examiners for Engineering and Surveying (NCEES) Fundamentals of Engineering (FE) exam. Students become familiar with exam topics and get hands-on problem-solving skills. All topics for the "Other Disciplines" exam specification are covered.
Two hours per week. Prerequisites: Permission of instructor.

ENGR 490 - RESEARCH IN ENGINEERING (2 credit hours)
Research project in engineering chose, designed and carried out by student with the advice and approval of a faculty member. Actual work may be carried out at off-campus sites. Written report, seminar presentation required. Prerequisites: PHYS 470, 40 credits of physics/engineering (or senior standing), department chair approval. Six hours per week.

GEOG 111 - INTRODUCTION TO OCEANS AND COASTS (3 credit hours)
The study of coastlines, coastal landforms, and the tectonic and oceanographic forces that shape them. One mandatory Saturday half-day field trip to Assateague Island is required.
Three hours per week.

GEOG 311 - COASTAL PROCESSES (3 credit hours)
Introduces more advanced concepts related to coastal dynamics, with an emphasis on real-world practical applications. Learn how to gather field data and compile it into professional reports. Two mandatory Saturday half-day field trips are required. Two hours lecture, two hours lab per week. Prerequisites: GEOG 111. Pre or Corequisites: GEOL 211

GEOL 103 - INTRODUCTION TO PHYSICAL GEOLOGY (4 credit hours)
Introduction to the nature and character of the Earth's crust and the geological processes that generate and shape landform features. Topics include minerals, rocks, earth structure and plate tectonics, geological processes and associated landforms. Three hours lecture, two hours laboratory per week.

GEOL 211 - SEDIMENT ANALYSIS (1 credit hour)
Lab-based course designed to introduce students to the most common methodologies field scientists use to measure, analyze and classify sediments. Two hours laboratory per week. Pre or Corequisites: GEOL 103 or permission of instructor.

GEOL 322 - GEOLOGICAL OCEANOGRAPHY (3 credit hours)
Explore the major features of the ocean basins and seafloor as well as the processes responsible for their formation. Discuss geological and geophysical techniques for mapping and understanding these processes. Three hours per week. Prerequisites: GEOG 111.

MATH 201: CALCULUS I (4 credit hours)
Introduction to analytic geometry, limits, continuity, derivatives of elementary functions, applications of the derivatives. May not receive credit for both MATH 198 and MATH 201. Prerequisite: MATH 140 or equivalent. Four hours per week.

MATH 202 - CALCULUS II (4 credit hours)
Introduction to integrals, infinite series, applications and techniques of integration.
Four hours per week. Prerequisites: C or better in MATH 198 or MATH 201 or equivalent.

MATH 306 - LINEAR ALGEBRA (4 credit hours)
Basic concepts of linear algebra: linear equations and matrices, vector spaces and subspaces, similar matrices, basis and dimension, linear transformations, eigenvalues, determinants, orthogonality, coordinate systems, and applications to geometry. Four hours per week. Prerequisites: C or better in MATH 202.

MATH 310 - CALCULUS III (4 credit hours)
Arc length, indeterminate forms, Euclidean spaces, functions of several variables, partial differentiation, multiple integrals. Four hours per week. Prerequisites: C or better in MATH 202.

MATH 311 - DIFFERENTIAL EQUATIONS I (4 credit hours)
Solutions of first and second order equations and their applications: separable, exact,

homogeneous, linear. Numerical and series solutions of ordinary and partial differential equations.
Four hours per week. Prerequisites: C or better in MATH 202.

PHYS 221 - PHYSICS I (4 credit hours)
Introduction to calculus-based Newtonian mechanics for students majoring in physics, engineering and chemistry. Prerequisite or Corequisite: MATH 201. Six hours lecture/activity per week.

PHYS 223 - PHYSICS II (4 credit hours)
Continuation of introductory physics. Topics include: electrostatics, current and resistance, DC and AC circuit analysis, magnetic fields, induction, electromagnetic waves and geometrical and wave optics.
Six hours lecture/ activity per week. Prerequisites: PHYS 221. Pre or Corequisites: MATH 202.

PHYS 225 - PHYSICS III (3 credit hours)
Continuation of introductory calculus-based physics. Topics include: static equilibrium and elasticity, fluid mechanics, wave motion and thermodynamics. Four hours lecture/ activity per week.
Prerequisites: PHYS 221. Pre or Corequisites: MATH 202.

PHYS 470 - SENIOR SEMINAR (1 credit hour)
Senior seminar for Physics majors. Introduction to research practices. Preparation for PHYS 475 or PHYS 490 projects. Prerequisites: 30 credits of physics and/or engineering, or department chair approval. One hour per week.

Appendix B

**B.S. Coastal Engineering - Salisbury
University Curriculum Guide**

First Year

Fall Semester (15 credits)	Spring Semester (15 credits)
PHYS 221 (4)	PHYS 223 (4)
MATH 201 (4)	MATH 202 (4)
GEOG 111 (3)	GEOL 103 (4)
First Year Seminar (4)	ENGR 100 (3)

Second Year

Fall Semester (14 credits)	Spring Semester (17 credits)
PHYS 225 (3)	MATH 311 (4)
MATH 310 (4)	ENGR 220 (3)
ENGR 110 (3)	CHEM 121 (4)
GEOL 211 (1)	GEOG 311 (3)
Elective (3)	Elective (3)

Third Year

Fall Semester (14 credits)	Spring Semester (15 credits)
Communication Through Writing (4)	ENGR 331 (3)
MATH 306 (4)	ENGR 411 (3)
ENGR 221 (3)	Humanity in Context (4)
ENGR 232 (3)	Personal Wellness (4)
	ENGR 306 (1)

Fourth Year

Fall Semester (15 credits)	Spring Semester (15 credits)
PHYS 470 (1)	ENGR 490 (3)
ENGR 412 (3)	ENGR 480 (2)
ENGR 413 (3)	GEOL 322 (3)
Human Expression (4)	ENGR 414 (3)
Social Configurations (4)	Social Issues (4)

Appendix C
Articulation

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PROGRAM ARTICULATION AGREEMENT
Between
Wor-Wic Community
College and Salisbury
University

Associate of Science in STEM Transfer, Engineering
Concentration to Bachelor of Science in Coastal
Engineering

August 2025 through July 2030

</center>

This Program Articulation Agreement ("Agreement"), effective this 1st day of August 2025 ("Effective Date"), is by and between Wor-Wic Community College, a community college located in Salisbury, Maryland, and Salisbury University, a constituent institution of the University System of Maryland, an agency of the state of Maryland (hereinafter sometimes referred to individually as a "Party" or "Institution" and collectively as the "Parties" or "Institutions"). This Agreement sets forth the joint curricula and program requirements for the completion of the Associate of Science in STEM Transfer, Engineering Concentration from Wor-Wic Community College and the Bachelor of Science in Coastal Engineering at Salisbury University.

<center>

RECITALS

</center>

Whereas, Wor-Wic Community College and Salisbury University are committed to partnering to expand the educational opportunities and collaborative academic programming of their respective institutions; and *Whereas*, the Institutions are committed to providing a smooth transition for students wishing to earn an associate of arts degree and a baccalaureate degree; and

Whereas, the intent of the Institutions is to avoid duplication of curricula, where appropriate, within articulated programs of studies; and

Whereas, the Institutions agree that the educational growth of students and the economic development of the community is better served through cooperative educational planning and optimal utilization of community resources.

Therefore, this Agreement commits the Parties to full support of an articulation process to deliver coursework for students, resulting in the associate of arts degree from Wor-Wic Community College and credit toward the Bachelor of Science in Coastal Engineering at Salisbury University. The Parties agree to the following:

I. **ACADEMIC REQUIREMENTS**
   A. The Institutions agree to follow the joint program curriculum and course by course articulation delineated in Appendix 1, which is attached hereto and made a part of this Agreement.
   B. Both Institutions will cooperate toward developing, disseminating, and presenting the articulated program information to students.
   C. Students who have graduated from Wor-Wic Community College program must first apply to Salisbury University. Once a completed application is received, Wor-Wic Community College graduates who have completed the associate's degree program in Associate of Science in STEM Transfer, Engineering Concentration, with a cumulative grade point average of 2.0 or higher will be granted admission to Salisbury University as an Coastal Engineering major.
   D. All articulated course credits applied towards satisfying Bachelor of Science in Coastal Engineering major requirements earned with a C or better will be accepted for transfer according to the articulation matrix in Appendix 1.
   E. Salisbury University shall provide a Checklist for students as a planning tool for completing coursework required for the Bachelor of Science in Coastal Engineering major in Appendix 2, attached hereto and made a part of this Agreement.
   F. Students intending to transfer are recommended to apply for admission by the priority deadline for the semester for which they intend to enroll.
   G. Students are subject to all specific policies pertaining to students admitted to the Salisbury University baccalaureate degree program in Bachelor of Science in Coastal Engineering and all other Salisbury University admissions policies and procedures.

II. **TERM AND TERMINATION**
   A. The term of this Agreement commences as of the Effective Date listed herein. This Agreement is based on the present curricula contained herein and in all appendices, and is effective for five (5) years from August 2025 to July 2030.
   B. Either Party may terminate this Agreement with notice to the other Party, pursuant to Section III.G below. Upon termination or expiration of this Agreement, the Parties

shall develop a process that will reasonably allow students already admitted to and enrolled in joint programming to continue their studies. Neither Party will terminate this Agreement at a time that would deter a "cohort-in-progress" from completing graduation within the originally designated timeframe.

III. **GENERAL PROVISIONS**
   A. Each Institution is responsible for the administration of its respective courses, including content, requirements, faculty, and student services (to include, but not limited to, admissions, financial aid, class registration, etc.).
   B. When enrolled in a Salisbury University course, the student is subject to all policies and procedures applicable to Salisbury University students. When enrolled in a Wor-Wic Community College course, a student is subject to all policies and procedures applicable to Wor-Wic Community College students. Additional joint policies and procedures may be adopted and implemented at the discretion of both Parties.
   C. The Parties recognize that course scheduling beyond the associate's degree level resides exclusively with Salisbury University and will be coordinated with Wor-Wic Community College by the designated Salisbury University representative. Where academic calendars differ, the Parties will work together to coordinate class offerings and class schedules.

   D. The disclosure of information about individual students is limited by the federal Family Educational Rights and Privacy Act (FERPA). The Parties agree that release of student educational records to each other is conditioned upon the submission of a signed agreement by the student authorizing such release.
   E. The Parties agree not to release student information to any third-party without the written consent of the other Party and in compliance with FERPA and any other federal or state of Maryland laws, rules, and regulations, and policies of the Parties.
   F. The Parties shall publicize any joint offerings in their respective catalogs, website, and other materials as appropriate. Notwithstanding the foregoing, neither Party may use the names or marks of the other without the prior written approval of the other Party.
   G. The Parties shall inform students in their respective programs of the complementary program opportunities available at each other's respective institution, support each other's marketing efforts toward the same, and encourage students to apply to programs consistent with an individual student's interests.

H. Notwithstanding anything in this Agreement to the contrary, both Parties retain full authority over their respective courses, programs, and requirements. Both Parties reserve the right to make changes to their respective courses, programs, and requirements. However, each Party shall give to the other reasonable notice and details of changes to this Agreement and other changes in its courses, programs, and requirements that may affect this Agreement. In the event such changes affect the terms of this Agreement, this Agreement and any of its appendices shall be updated as needed to reflect such changes.

I. The Parties designate the following persons as their respective representatives to coordinate and manage the activities under this Agreement:

>   Wor-Wic Community College
>   Kristin Mallory, VP for
>   Academic Affairs 32000
>   Campus Drive
>   Salisbury, Maryland 21804
>   kmallory@worwic.edu
>   (410) 334-2813
>
>   Salisbury University
>   Michael Scott, Dean
>   Richard A. Henson School of Science and Technology
>   1101 Camden Avenue
>   Salisbury, Maryland 21801
>   msscott@salisbury.edu
>   (410) 543-6489

J. The designated representatives shall meet as needed, at a mutually agreeable time and location, to discuss various collaborations and other topics of interest to either Institution. A Party may change its representative by giving notice to the other Party.

K. Either Institution may at any time recommend changes to this Agreement. Both Institutions reserve the right to modify the programs as deemed necessary and agree to inform the appropriate representatives of the other Institution of recommended changes. This Agreement may be modified only in writing signed by both Parties.

L. All notices under this Agreement must be in writing; delivered in person, by U.S. mail or by email to the representatives listed above in this Section III.

M. Nothing in this Agreement is intended to form a joint venture between the

Parties. Nothing in this MOU is intended to create rights or benefits for any person or entity other than the Parties.

N. This Agreement integrates the entire agreement of the Parties and supersedes any and all prior and/or contemporaneous agreements between the Parties, written or oral, with respect to the subject matter of this Agreement.

IN WITNESS WHEREOF, the Parties have caused this Agreement to be executed by their duly authorized representatives.

Wor-Wic Community College   **Salisbury University**

_____   _____
Deborah Casey, PhD   Laurie L. Couch, PhD
President   Provost and Senior Vice President
                                                        of Academic Affairs

Date: _____   Date: _____

APPENDIX 1 of the articulation agreement
Articulation Matrix

The following matrix includes course equivalencies, including general education requirements and courses necessary to satisfy major requirements. The matrix also includes a recommended student curricular pathway to complete the Associate of Science degree and the Bachelor of Science degree requirements.

While the student is not required to take all courses in the precise order recommended in the articulation matrix, all course equivalencies described in the matrix and the manner in which they fulfill general education and major requirements at Salisbury University are binding. Students are strongly advised to seek appropriate advising with regard to the completion of requirements for the associate of science degree, transition to Salisbury University, and completion of all requirements for the Bachelor of Science in Coastal Engineering

WW Course Prefix	WW Course Number	WW Course Title	Credits (at WW)	GenEd at WW	Semester	SU Course Prefix	SU Course Number	SU Course Title	Credits (at SU)	GenEd at SU	SU Degree Requirements	Credits Taken by Student	College
ENG	101	English I	3	Composition	Semester 1	ENGL	103	Research	3	CTW (1 of 10)	MC (1 of 29)	14	Wor-Wic Community College
MTH	201	Calculus I	4	Mathematics		MATH	201	Calculus I	4	QA (2 of 10)			
PHY	141#	Principles of Physics I	4	Biological/Physical Science		PHYS	221	Physics I	4	STS (3 of 10)	MC (2 of 29)		
EGR	101	Intro to Engineering Design	3			ENGR	100	Intro to Engineering Design	3		MC (3 of 29)		
ENG	151	Fundamentals of English II	3	Arts and Humanities	Semester 2	ENGL	LIT	English Literature Elective	3	HE (4 of 10)		17	
MTH	202	Calculus II	4			MATH	202	Calculus II	4		MC (4 of 29)		
GEN	ED	Social/Behavioral Science	3	Social/Behavioral Science		GEN	ED		3	SC (5 of 10)			
PHY	142#	Principles of Physics II	4			PHYS	223	Physics II	4		MC (5 of 29)		
ELEC		General Elective	3			ELEC		TBD	3				
CHM	105	General Chemistry I	4	al Science	Semester 3	CHEM	121	General Chemistry I	4	HoS (6 of 10)	MC (6 of 29)	13	
GEN	ED	Science	3	I Science		GEN	ED		3	SI (7 of 10)			
EGR	202	Statics	3			ENGR	110	Statics	3		MC (7 of 29)		
GEN	ED	Requirement	3	Humanities		GEN	ED		3	HiC (8 of 10)			
MTH	205	Differential Equations	4		Semester 4	MATH	311	Differential Equations	4		MC (8 of 29)	16	
MTH	203	Calculus III	4			MATH	310	Calculus III	4		MC (9 of 29)		
PHY	243#	Principles of Physics III	4			PHYS	225	Principles of Physics III	4		MC (10 of 29)		
ELEC			4			ELEC			4				
					Semester 5	GEOG	111	Introduction to Oceans and Coasts	3		MC (11 of 29)	15	Salisbury University
						GEOL	211	Sediment Analysis	1		MC (12 of 29)		
						GEOL	103	Introduction to Physical Geology	4		MC (13 of 29)		
						ENGR	221	Dynamics	3		MC (14 of 29)		
						ENGR	232	Thermodynamics	3		MC (15 of 29)		
						PHYS	270	Sophomore Seminar in Physics, Astronomy, and Engineering	1		MC (16 of 29)		
					Semester 6	MATH	306	Linear Algebra	4		MC (17 of 29)	17	
						ENGR	220	Mechanics of Materials	3		MC (18 of 29)		
						ENGR	331	Fluid Mechanics	3		MC (19 of 29)		
						ENGR	411	Introduction to Coastal Engineering	3		MC (20 of 29)		
						ENGR	306	Introduction to MATLAB	1		MC (21 of 29)		
						GEOG	311	Coastal Processes	3		MC (22 of 29)		
					Semester 7	ENGR	412	Coastal Structures and Beach Nourishment	3		MC (23 of 29)	15	
						ENGR	413	Coastal Renewable Energies	3		MC (24 of 29)		
						PHYS	470	Senior Seminar	1		MC (25 of 29)		
						FTWL	106	Lifelong Fitness and Wellness	4	PW (9 of 10)			
						ELEC			4				
					Semester 8	ENGR	480	Fundamentals of Engineering Review	2		MC (26 of 29)	15	
						ENGR	414	Field Methods and Coastal Modeling	3		MC (27 of 29)		
						ENGR	490	Engineering Capstone Experience	3	EL (10 of 10)	MC (28 of 29)		
						GEOL	322	Geological Oceanography	3		MC (29 of 29)		
						ELEC			4				

60

\# - WWCC's PHY 141, 142, & 243 transfer as SU's PHYS 221, 223, 225 as a block

CC Credits Transferred 60
SU Credits 62

APPENDIX 2 of the articulation agreement
Bachelor of Science Coastal
Engineering Curriculum Fall 2025

This Appendix E outlines the requirements to earn a baccalaureate degree in Coastal Engineering from Salisbury University, as of the Fall 2025 semester. It includes overall Salisbury University curriculum policies, general education requirements, major core courses, and major elective courses.

B.S. Coastal Engineering - Salisbury University Curriculum Guide

First Year

Fall Semester (15 credits)
PHYS 221 (4)
MATH 201 (4)
GEOG 111 (3)
GENE FYS (4)

Spring Semester (15-16 credits/30-31)
PHYS 223 (4)
MATH 202 (4)
GEOL 103 (4)
GENE CTW (3-4)

Second Year

Fall Semester (15-16 credits/45-47)
PHYS 225 (3)
MATH 310 (4)
ENGR 110 (3)
GEOL 211 (1)
GENE DI (3-4)
PHYS 270 (1)

Spring Semester (16-17 credits/61-64)
MATH 311 (4)
ENGR 220 (3)
ENGR 100 (3)
GEOG 311 (3)
GENE CCE (3-4)

Third Year

Fall Semester (14 credits/75-78)

CHEM 121 (4)
MATH 306 (4)
ENGR 221 (3)
ENGR 232 (3)

Spring Semester (14-15 credits/89-93)
ENGR 331 (3)
ENGR 411 (3)
GENE HIC (3-4)
GENE PW (4)
ENGR 306 (1)

Fourth Year

Fall Semester (13-15 credits/102-108)
PHYS 470 (1)
ENGR 412 (3)
ENGR 413 (3)
GENE HE (3-4)
GENE SC (3-4)

Spring Semester (14-15 credits/116-123)
ENGR 490 (3)
ENGR 480 (2)
GEOL 322 (3)
ENGR 414 (3)
GENE SI (3-4)

Appendix D
Engineering Firms – Support Letters

December 12, 2023

Dr. Carolyn Ringer Lepre, President
Salisbury University
1001 Camden Avenue
Salisbury, MD 21801

Re: Proposed Bachelor of Science in Coastal Engineering at Salisbury University

My name is James H. Willey, Jr., P.E., and I am the Managing Member/President of George, Miles & Buhr, LLC (GMB), headquartered in Salisbury, Maryland. We support the proposed Bachelor of Science in Coastal Engineering program at Salisbury University. This program will help meet a critical workforce need in the State, particularly on Maryland's Eastern Shore, namely engineering graduates trained to solve our client's most pressing issues related to development and environmental protection in the coastal zone.

GMB is a client-focused firm providing engineering, architectural, surveying, and coastal resiliency services across the Mid-Atlantic region. Founded in 1960, we provide quality design to enhance our communities' infrastructure and safeguard the environment. We currently employ 100 people among five offices, including Salisbury and Sparks, Maryland, as well as lower Delaware offices in Seaford, Ocean View, and Lewes. Hiring qualified engineers is a critical challenge inhibiting the growth and long-term stability of our firm. We typically have 3-5 open engineering positions, limiting our ability to respond to project demand and provide necessary client service.

Most architectural, engineering, and construction (AEC) firms are impacted by the statewide shortage of engineers.The latest statistics show 3,000+ open engineering positions in Maryland. Bureau of Labor Statistics predict 10.8% of engineering jobs remain unfilled. Maryland institutions of higher education produce about 1,600 engineering graduates per year with an unknown, but significant, percentage of those graduates leaving the state to work. With annual graduates accounting for 50% of the demand, the challenge is acute.

In 2023, we employed ten summer interns in hopes of filling permanent openings. We recruited from nearly all universities offering BS programs within 150 miles of Salisbury, as well as students matriculating as far away as Clemson University. We also regularly hire SU Physics and Earth Science majors to assist in technical areas. SU Physics graduates who are able to pass the Fundamentals of Engineering exam are a welcome addition to the local talent pool, but GMB would be better served with an ABET-accredited engineering program. We will continue our decades long support of SU by hiring students with a BS in Coastal Engineering.

GMB has historically suffered recruiting difficulties arising from the dearth of locally produced engineering talent. Our most productive and loyal employees have deep, significant connections to Maryland's Eastern Shore.The lack of an engineering program at Salisbury University specifically impacts our ability to recruit and retain needed local talent.

Thank you for the opportunity to support a program which will address a critical local workforce need. It is refreshing to see the University System of Maryland poised to initiate programs designed to boost the local economy and support the communities in which the Universities operate.

Sincerely,

James H. Willey, Jr., P.E.
Managing Member/President

G. W. C. WHITING
(1893-1974)

WILLARD HACKERMAN
(1918-2014)

TIMOTHY J. REGAN
PRESIDENT AND CEO

FOUNDED 1909

THE WHITING-TURNER CONTRACTING COMPANY

ENGINEERS AND CONTRACTORS

CONSTRUCTION MANAGEMENT
GENERAL CONTRACTING
DESIGN-BUILD
SPECIALTY CONTRACTING
PRECONSTRUCTION
BUILDING INFORMATION MODELING
INTEGRATED PROJECT DELIVERY

100 WEST MAIN STREET
SALISBURY, MARYLAND 21801
410-677-3253

INSTITUTIONAL
COMMERCIAL
CORPORATE
TECHNOLOGY
INDUSTRIAL/PROCESS
INFRASTRUCTURE
SUSTAINABILITY

December 4, 2023

Dr. Carolyn Ringer Lepre, President
Salisbury University
1001 Camden Avenue
Salisbury, MD 21801

Dear Dr. Ringer Lepre:

My name is Scott Saxman and I am Division Vice President with The Whiting-Turner Contracting Company in Salisbury, Maryland. I write in support of the proposed Bachelor of Science in Coastal Engineering program at Salisbury University. This program will help fill a critical workforce need in the state of Maryland, particularly on Maryland's Eastern Shore, namely the production of graduates trained to solve some of our client's most pressing issues related to development and environmental protection in the coastal zone.

The Whiting-Turner Contracting Company is a Maryland based client-focused firm that provides comprehensive construction services across the United States. Founded in 1909, we provide quality construction services that enhance our communities and safeguard the environment. We employ over 4,000 people among our 50 office locations across the US. Hiring qualified engineers is a critical challenge that is inhibiting the growth of our firm and of the technical engineering capacity of our local area in general. At any given time, we have a variety of open positions for engineers, limiting our ability to respond to project demand.

Our engineering workforce challenge is multi-dimensional. We, like most other architectural, engineering, and construction (AEC) firms are impacted by the statewide shortage of engineers, with the latest statistics showing more than 3,000 open engineering positions in the state at any given time. The Bureau of Labor Statistics predicts that 10.8% of engineering jobs are currently unfilled. With Maryland institutions of higher education producing about 1,600 engineering graduates per year (and some significant but unknown percentage of those graduates leaving the state to find work), the challenge is acute. We regularly offer over 800 summer internships nationally and over 20 internships locally between our Salisbury and Delaware offices to students from diverse schools such as West Virginia University, Clarkson University and Virginia Tech; we look forward to supporting the BS in Coastal Engineering program at SU with internship offers as well.

Additionally, our firm feels the pinch of a near-complete lack local engineering talent. We have found that our most productive and loyal employees have deep, significant family connections to Maryland's Eastern Shore. These local ties sustain our young workforce as they start families and raise their children while becoming valuable employees at our firm. Therefore, the lack of an engineering program

WWW.WHITING-TURNER.COM

OFFICES NATIONWIDE

at Salisbury University specifically impacts our ability to recruit and retain the talent we need to be successful. We have had some success hiring and retaining local Physics graduates with Engineering coursework from SU — we look forward to that program's faculty producing students from an ABET-accredited program that are well-prepared to pass the Fundamentals of Engineering exam.

Thank you for the opportunity to voice our support for a program that will address such a critical local workforce need. It is refreshing to see the University System of Maryland focused on bringing forth programs at its universities that are designed to boost the local economy and support the communities in which they operate.

Sincerely,
THE WHITING-TURNER CONTRACTING COMPANY

Scott Saxman
Division Vice President

December 8, 2023

Dr. Carolyn Ringer Lepre President
Salisbury University
1001 Camden Avenue
Salisbury, MD 21801

Re: **SU Coastal Engineering program**

Dear Dr. Lepre:

My name is W. Ronald Morgan, AIA, President of Becker Morgan Group headquartered in Salisbury, Maryland. I'm writing in support of the proposed Bachelor of Science in Coastal Engineering program at Salisbury University. This program will help fill a critical workforce need in Maryland, particularly on the Eastern Shore, where our coastal environments are facing significant challenges.

Becker Morgan Group provides comprehensive engineering, architectural, and planning services throughout the Mid-Atlantic region. Founded in 1983, we design solutions that enhance our communities and safeguard the environment, with a staff of 120 in 5 offices, in Maryland, Delaware and North Carolina. Hiring qualified engineers is a critical challenge that restricts our growth. We often have 5 open positions for engineers, impacting our ability to respond to marketplace demands.

Like most other architectural and engineering firms, we are impacted by the statewide shortage of engineers, with the latest statistics showing more than 3,000 open engineering positions in the state at any given time. We regularly offer up to 10 summer internships to students from the University of Delaware, University of Maryland, Drexel University, and Catholic University of America. We look forward to supporting the BS in Coastal Engineering program at SU with internship offers as well.

We have found that our most loyal employees have deep, significant family connections to Maryland's Eastern Shore. These local ties sustain our young workforce as they start families, raising their children while becoming valuable members of our firm. Therefore, the lack of an engineering program at Salisbury University specifically impacts our ability to recruit and retain the talent we need to be successful.

Thank you for the opportunity to voice support for a program that will address this critical local workforce need. It is refreshing to see the University System of Maryland focused on bringing forth programs at its universities that are designed to boost the local economy and support the communities in which they operate.

Sincerely,

BECKER MORGAN GROUP, INC.

W. Ronald Morgan, AIA President

900.000 SU_Engineering.docx

TOPIC: University of Baltimore (UBalt) proposal for Bachelor of Science (BS) in Artificial Intelligence (AI) for Information Technology (IT) Operations

COMMITTEE: Education Policy and Student Life and Safety

DATE OF COMMITTEE MEETING: December 3, 2024

SUMMARY: The University of Baltimore seeks approval to introduce a new program, the Bachelor of Science (BS) in Artificial Intelligence for IT Operations. This program aims to equip students with the skills and knowledge necessary to thrive in the rapidly evolving field of artificial intelligence (AI), while also fostering diversity and inclusion in technology education. The BS in Artificial Intelligence for IT Operations intends to prepare students interested in the logistical aspects of integrating AI hardware and software into an organization's information technology (IT) infrastructure. Students will graduate with skills in various AI and related technologies, including programming languages, machine learning, data analytics, cloud computing, cybersecurity, and ethical considerations in AI.

AI is revolutionizing various sectors, leading to a high demand for AI-related skills in the current technology job market. Artificial Intelligence is a significant driver for Maryland's economic growth and technological development, as evidenced by Governor Wes Moore's Executive Order 01.01.2024.02 and Baltimore's designation as a Federal Tech Hub. The University of Baltimore's Bachelor of Science in Artificial Intelligence for IT Operations addresses this demand by providing graduates with a strong foundation in AI principles, technical skills, and practical applications. The program equips students to implement, secure, and scale AI solutions across various sectors, preparing them for immediate employment and positioning them as key contributors to Maryland's technology-driven economy.

ALTERNATIVE(S): The Regents may not approve the program or may request further information.

FISCAL IMPACT: No additional funds are required. The program can be supported by the projected tuition and fee revenue.

CHANCELLOR'S RECOMMENDATION: That the Education Policy and Student Life and Safety Committee recommend that the Board of Regents approve the UBalt proposal for a BS in Artificial Intelligence for IT Operations.

COMMITTEE RECOMMENDATION:	DATE: December 3, 2024
BOARD ACTION:	DATE:
SUBMITTED BY: Alison M. Wrynn 301-445-1992	awrynn@usmd.edu

November 12, 2024

Jay A. Perman, M.D.
Chancellor
University System of
Maryland 3200 Metzerott
Road
Adelphi, MD 20783-1690

Dear Dr. Perman:

The University of Baltimore is proposing a new Bachelor of Science in Artificial Intelligence for IT Operations (proposed CIP 11.0102 and proposed HEGIS code 0799.03). This 120-credit program will equip graduates with the skills and knowledge necessary to thrive in the rapidly evolving field of AI.

The proposed bachelor's program will prepare students interested in the logistical aspects of integrating AI hardware and software into an organization's information technology capabilities. Graduates from this program will be able to apply for MS degree programs in fields related to IT, cyber security, human-centered design and technology-related legal and ethical studies.

If you have any questions, please contact Aaron Wachhaus at 410-837-6113 or awachhaus@ubalt.edu.

Sincerely,

p.p. Aaron Wachhaus, Associate Provost - Academic Affairs
Ralph O. Mueller, Senior Vice President and Provost

Encl.
cc: Dr. Candace Caraco, Associate Vice Chancellor for Academic Programs, Academic & Enrollment Services and Articulation

UNIVERSITY SYSTEM OF MARYLAND INSTITUTION PROPOSAL FOR

X	New Instructional Program
	Substantial Expansion/Major Modification
	Cooperative Degree Program
X	Within Existing Resources, or
	Requiring New Resources

University of Baltimore
Institution Submitting Proposal

BS in Artificial Intelligence for IT **Operations**
Title of Proposed Program

Bachelor's of Science	**Fall 2025**
Award to be Offered Date	Projected Implementation

0799.03	**11.0102**
Proposed HEGIS Code	Proposed CIP Code

Yale Gordon College of Arts & Sciences	**Giovanni Vincenti**
Department in which program will be located	Department Contact
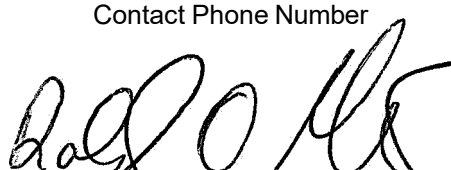
Contact Phone Number	Contact E-Mail Address
Signature of President or Designee	11/11/2024 Date

A.   Centrality to Institutional Mission and Planning Priorities:

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

The University of Baltimore (UBalt), a Predominantly Black Institution in Maryland, is seeking authorization from MHEC to introduce a new program: Bachelor of Science in Artificial Intelligence for IT Operations. This program aims to equip students with the skills and knowledge necessary to thrive in the rapidly evolving field of AI, while also fostering diversity and inclusion in technology education. It offers a comprehensive understanding of AI principles, practical applications, and ethical considerations.

The Bachelor of Science in Artificial Intelligence for IT Operations intends to prepare students interested in the logistical aspects of integrating AI hardware and software into an organization's information technology (IT) capabilities. The program is designed to attract first-year college students as well as transfer students from local community colleges who earned an AS or AAS degree in an IT field. The program is designed for in-person delivery, as the students will have access to specialized hardware and software that will be managed through the University. Graduates interested in the workforce will qualify for AI-centered jobs related to IT operations, cyber security, and consulting. Graduates will qualify for MS degree programs in fields related to IT, cyber security, human-centered design, and technology-related legal and ethical studies.

The curriculum prepares students for the cutting-edge technologies and methodologies by providing fundamental knowledge and hands-on experience through individual and group work, problem- solving, and critical thinking exercises. Students will graduate with skills in various AI and related technologies, including programming languages, machine learning, data analytics, cloud computing, cybersecurity, and ethical considerations in AI.

The program begins with introductory courses in programming, information technology fundamentals, statistics, and mathematical structures for information technology, providing a firm technical foundation. Building on this foundation, students will then learn core concepts and techniques in AI, allowing them to develop a deeper understanding of the field. The program includes a variety of advanced AI topics such as Cloud and Edge Intelligence, Software Development and AI, and AI and Cyber Security enabling technical mastery in specific subfields.

We are excited to offer our students the flexibility of different entry points into the program: they may enter as freshmen who spend four years at UBalt, or they may enter smoothly at several different points as transfer students from community colleges, or as working professionals who want to further develop their AI & IT skills. Courses are taught during day and evening sessions.

The program consists of 60 required credits and has the following breakdown:
- Artificial Intelligence for IT Operations Core, 45 credits
- Mathematics, 6 credits
- Philosophy, 3 credits
- Human-Centered Design, 3 credits
- Capstone, 3 credits

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

The mission of the University of Baltimore is the following:

The University of Baltimore offers career-focused education for aspiring and current professionals, providing the region with highly educated leaders who make distinctive contributions to the broader community. The UBalt vision is to be the premier regional university for career advancement, where leaders grow, thrive, and learn to apply their skills for solving local and global challenges.

The University of Baltimore provides innovative education in business, public affairs, the applied liberal arts and sciences, and law to serve the needs of a diverse population in an urban setting. A public university, the University of Baltimore offers excellent teaching and a supportive community for undergraduate, graduate and professional students in an environment distinguished by academic research and public service. The University:

- Makes excellence accessible to traditional and nontraditional students motivated by professional advancement and civic awareness.
- Establishes a foundation for lifelong learning, personal development and social responsibility.
- Combines theory and practice to create meaningful, real-world solutions to 21st-century urban challenges; and
- Is an anchor institution, regional steward, and integral partner in the culture, commerce, and future development of Baltimore and the region.

The Artificial Intelligence for IT Operations program serves the University's mission by ensuring that both traditional and non-traditional students can benefit by:

- Offering courses at times that are convenient for both groups of students.
- Making accommodations so that we can meet with students for office hours at times that do not overlap with traditional work hours.
- Letting our faculty members set timelines and deadlines for course assignments and projects in a way that is mindful of traditional work demands.

Moreover, the Program provides the most relevant education to our students by:

- Combining theory and practice in each course.
- Ensuring that our students have as many hours of hands-on experience as the curriculum allows.
- Asking the students to complete practical and relevant projects for each course.
- Discussing the latest technologies.
- Adapting the curriculum to the demands of the job market.
- Providing up-to-date labs and other support for students.

The University of Baltimore's Strategic Goals are to:

1. Position UBalt as the region's premier professional, career-focused university
2. Strengthen student success

3. Solidify UBalt's commitment to community engagement and service
4. Organize for long-term financial stability
5. Achieve excellence in research, scholarship, and creative activity
6. Strengthen UBalt's commitment to diversity, equity and inclusion

AI is revolutionizing various sectors, leading to a high demand for AI-related skills in the current technology job market. This program offers courses that teach the fundamentals of AI and its applications and include emerging trends and technologies in AI and IT. The proposed program directly aligns with the institution's strategic goals 1, 2, and 6 in several important ways, reinforcing its significance for the institution's growth and mission. Below are some ways in which the program supports these strategic goals:

Goal 1: The program is designed with a rigorous curriculum that reflects the latest advancements in AI and IT research and technology, aligning with the institution's goal of providing high-quality education. It is also designed to address the growing demand for professionals skilled in AI and IT, reinforcing the university's status as a premier training ground for top talent and preparing graduates to succeed in a competitive marketplace. In addition, this program aims to integrate AI education/literacy into various academic fields (AITC 270 Basic Concepts of Artificial Intelligence: open to all at UBalt students), promoting AI literacy among all students and ultimately aiding in the creation of a talented, AI-informed workforce that addresses global demands.

Goal 2: The program combines essential knowledge and practical skills that can equip students to face future challenges and enhance their achievements. The program encourages collaboration with other departments, such as philosophy and ethics, and environmental science, which supports the strategic goal of fostering interdisciplinary learning. This approach prepares students to tackle complex problems from multiple perspectives. Also, regular curriculum revisions and updates will help maintain the program's relevance and effectiveness.

Goal 6: The program emphasizes diversity, equity, and inclusion (DEI) in both curriculum development and recruitment initiatives, ensuring representation of varied perspectives. It also promotes interdisciplinary initiatives and research that examine diversity-related topics, encouraging collaboration across departments. This approach supports the institution's strategic objectives of fostering an inclusive learning environment.

The mission of the Yale Gordon College of Arts and Sciences is the following:

The Yale Gordon College of Arts and Sciences promotes critical thinking, encourages innovation and discovery, and enriches the intellectual lives of its diverse community of learners. Through interdisciplinary and discipline-based programs in the arts, humanities, and social and natural sciences, the college offers visionary, integrative learning and teaching environments enhanced with rapidly evolving information and communication technologies. Our graduates learn to be reflective, skilled communicators, adept at addressing contemporary problems within an ethical framework and able to adapt to a changing world. To be well prepared for the world of work, our students become broadly informed and deeply engaged in local, regional, and world communities.

The program supports the College by preparing students for professional success in a rapidly

changing technology environment, by promoting critical thinking, independent as well as collaborative work (formal and informal), and effective written and oral communication in its courses, and by adapting to a rapidly changing technology environment.

A.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 program will be overseen by our current faculty, allowing us to avoid the need for new hires. Our existing faculty have the expertise required to effectively deliver the curriculum. We are also prepared to bring in adjunct faculty as needed, ensuring we meet the demands of the program while maintaining quality instruction. Detailed financial information is presented in Section L of this proposal.

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

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

The program's requirements will be fulfilled within the limits of the current faculty's teaching responsibilities. If necessary, supplementary compensation for overloads will be implemented.

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

We are deeply committed to offering the program for as long as reasonably required to effectively build and maintain a strong and sustainable level of enrollment. This ensures that we can effectively meet the needs of our students.

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

B.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*

The State of Maryland has recognized the significance of Artificial Intelligence (AI) as a driver for economic growth and technological development, as evidenced by Governor Wes Moore's Executive Order 01.01.2024.02 and Baltimore's designation as a Federal Tech Hub. The University of Baltimore's Bachelor of Science in Artificial Intelligence for IT Operations addresses this demand by providing graduates with a strong foundation in AI principles, technical skills, and practical applications. The program equips students to implement, secure,

and scale AI solutions across various sectors, preparing them for immediate employment and positioning them as key contributors to Maryland's technology-driven economy.

As a Minority-Serving Institution, the University of Baltimore is committed to expanding educational opportunities in AI for minority and economically disadvantaged students, helping them access higher-paying careers and reducing the risk of job displacement due to automation. The program's unique focus on AI for IT operations complements offerings at regional institutions, including Historically Black Colleges and Universities (HBCUs). Covering AI applications from smart devices to cloud and edge computing systems, the curriculum is aligned to meet the workforce needs of Maryland's emerging technology sectors and foster partnerships with local tech companies, government agencies, and research institutions. This alignment supports regional economic development and creates opportunities for internships, research projects, and community engagement that enhance the impact of AI across the state.

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

The program targets underrepresented and economically disadvantaged students to reduce barriers and increase participation in STEM fields, supporting Maryland's goal of equitable access to higher education. As a Minority-Serving Institution, the University of Baltimore is uniquely positioned to offer this program, providing opportunities that empower students to access higher-paying careers and reduce risks of job displacement due to automation and AI. With a focus on real-world applications of AI in IT operations, the curriculum equips students with foundational knowledge and prepares them for immediate employment.

By integrating technical and human-centered components, the program aligns with the State's goal of enhancing student success and fostering innovation. It includes AI applications in cloud and edge computing, emphasizing security and addressing the State Plan's Priority 8 by promoting risk-taking and problem-solving through an equity lens. The program contributes to the state's broader objectives of innovation, inclusivity, and equity in higher education, ensuring that graduates are technically proficient and equipped to support Maryland's evolving workforce needs and economic development.

C.   Quantifiable and Reliable Evidence and Documentation of Market Supply and Demand in the Region and State:

C.1.   Describe potential industry or industries, employment opportunities, and expected level of entry (ex: mid-level management) for graduates of the proposed program.

Graduates of the Bachelor of Science in Artificial Intelligence for IT Operations at the University of Baltimore will be prepared for a variety of roles across several industries, reflecting the growing demand for AI expertise in Maryland. AI is increasingly integral to operations in the following sectors:

1. **Technology and IT Services:** With Baltimore's recent designation as a Federal Tech Hub, graduates can expect significant opportunities within local tech firms specializing in software development, cloud computing, and cybersecurity Examples include:

- - *Northrop Grumman*: Headquartered in Maryland, it offers AI-related roles like Machine Learning Engineers and AI/ML Operations Analysts.
  - *Booz Allen Hamilton*: A consulting firm with a significant presence in Maryland, focusing on AI for government and commercial clients.
  - *Mindgrub Technologies*: A Baltimore-based tech agency that offers roles like AI Engineers, Cloud Solutions Engineers, and Data Operations Analysts.
2. **Government and Defense:** Maryland is home to many federal agencies, defense contractors, and cybersecurity firms that integrate AI for enhanced operations, threat detection, and automation, such as:
   - *National Security Agency (NSA)*: Offers AI roles related to cybersecurity, threat detection, and automation of network operations.
   - *U.S. Cyber Command*: Focuses on AI integration to secure national infrastructure, with roles like Cyber Operations Specialists.
3. **Healthcare and Biotech:** AI is pivotal in Maryland's healthcare sector, aiding in predictive analytics, patient monitoring, and healthcare IT operations.
   - *Johns Hopkins Medicine*: Uses AI in medical devices, patient monitoring, and healthcare IT operations.
   - *MedStar Health*: Utilizes AI for predictive analytics and patient care optimization.
4. **Finance and Insurance:** AI's role in financial services and insurance includes automating risk assessment, fraud detection, and customer service operations.
   - *T. Rowe Price*: Uses AI for data analysis, risk assessment, and customer service automation.
   - *CareFirst BlueCross BlueShield*: Leverages AI for fraud detection, customer support, and operational efficiency.
5. **Manufacturing and Logistics:** AI is used to optimize supply chains, manage inventory, and enhance production efficiency.
   - *Stanley Black & Decker*: Uses AI for supply chain optimization and process automation.
   - *Under Armour*: Employs AI to improve inventory management, customer insights, and logistics.

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

The core areas of focus in this program include AI and IT technologies, with an emphasis on their applications in diverse fields. These areas are essential in today's technology market. The Occupational Outlook Handbook, published by the US Bureau of Labor and Statistics (BLS), offers the following potential for occupations related to AI/IT occupations. The table below shows a breakdown of some key AI and IT occupations, including statistics on employment projections and wage data based on the latest information from the Bureau of Labor Statistics (BLS).

Occupation	2023 Median Pay	Number of Jobs, 2023	Job Outlook, 2023-33	Employment Change, 2023-33
Computer and Information Research Scientists	$145,080 per year $69.75 per hour	36,600	26% (Much faster than average)	9,400
AI Researchers are part of the computer and information research scientist's category	$145,080 per year $69.75 per hour	36,600	26% (Much faster than average)	9,400
Software Developers (AI-focused), Quality Assurance Analysts, and Testers	$130,160 per year $62.58 per hour	1,897,100	17% (Much faster than average)	327,900
Machine Learning Engineers (not a distinct category in BLS but related to software development)	$130,160 per year $62.58 per hour	1,897,100	17% (Much faster than average)	327,900
Data Scientists	$108,020 per year $51.93 per hour	202,900	36% (Much faster than average)	73,100
Computer Systems Analysts	$103,800 per year $49.90 per hour	527,200	11% (Much faster than average)	56,500
Database Administrators and Architects	$117,450 per year $56.46 per hour	141,900	9% (Much faster than average)	13,200
Information Security Analysts	$120,360 per year $57.87 per hour	180,700	33% (Much faster than average)	59,100
Web Developers and Digital Designers	$92,750 per year $44.59 per hour	222,600	8% (Faster than average)	18,600
Computer Network Architects	$129,840 per year $62.42 per hour	177,800	13% (Much faster than average)	23,900
Network and Computer Systems Administrator	$80,600 per year $38.75 per hour	350,000	5% (Average)	18,200
AI Trainer	$95,000 per year $45.67 per hour	113,300	18% (Much faster than average)	3,000
Robotics Engineer	$105,190 per year $50.57 per hour	132,500	6.4% (Average)_	40,000

Source: https://www.bls.gov/ooh/computer-and-information-technology/computer-and-information-research-scientists.htm#tab-8

As companies increasingly integrate AI into their operations, the AI job market is expected to grow significantly in the coming years (see table above) by offering competitive salaries and

diverse opportunities. Staying up to date on these technological advancements and continuously enhancing skills will be key for professionals looking to thrive in this dynamic field.

As these areas demonstrate a growth rate that is either comparable to or faster (in some cases much faster) than average, they are of economic and technological importance to the Baltimore region and therefore of central importance to UBalt's mission.

C.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.

Recent market surveys and industry reports highlight the increasing demand for professionals with expertise in AI, IT operations, and related fields. The following evidence provides quantifiable data on training needs and anticipated job vacancies over the next five years:

U.S. Bureau of Labor Statistics (BLS) Projections

- The BLS projects that roles in AI and related fields, such as Data Scientists, Machine Learning Engineers, Information Security Analysts, and Computer and Information Research Scientists, will grow significantly.
    - Data Scientists and Mathematical Science Occupations: Expected to grow 36% from 2023 to 2033, adding around 40,000 new jobs nationwide.
    - Information Security Analysts: Anticipated to grow by 35%, with an expected 57,000 new positions over the same period.
    - Computer and Information Research Scientists: Projected growth of 21%, reflecting an increase in demand for AI and machine learning specialists.
    - Source: https://www.bls.gov/ooh/

CompTIA IT Industry Outlook (2024)
- CompTIA's 2024 IT Industry Outlook survey indicates that 58% of companies are investing in AI-related technologies, driving the need for training in AI development, implementation, and maintenance.
- The survey also notes that 63% of IT professionals expect increased hiring in AI roles, with anticipated demand for training programs tailored to AI integration within IT operations.
- Source: https://connect.comptia.org/content/research/it-industry-trends-analysis

Burning Glass Technologies Labor Insights (2024)
- Burning Glass Technologies' labor market analysis identifies nearly 500,000 AI-related job postings across the U.S. in the past year, with a projected increase of 20% over the next five years.
- The analysis also shows that positions related to AI implementation and support, including roles like AI Engineers, Cloud AI Specialists, and AI Trainers, are among the fastest growing, with a significant need for specialized training programs to meet these demands.
- Source: https://www.burningglassinstitute.org/research/2023-skills-compass-report

National Association of Colleges and Employers (NACE) 2024 Survey
- According to the NACE survey, 71% of employers across sectors plan to hire for AI-related positions, particularly those focused on AI applications in IT operations, cloud computing, and cybersecurity.
- The survey also identifies a gap in skills related to AI implementation, with 42% of employers stating a need for more graduates who possess both technical AI skills and operational expertise.
- Source: https://www.naceweb.org/research/reports

LinkedIn Workforce Report (2024)
- LinkedIn's report on emerging jobs identifies AI Specialist and Machine Learning Engineer as two of the top 10 fastest-growing roles, with vacancies expected to increase by 25% over the next five years.
- It also highlights the need for education and training in AI ethics, security, and human-centered design, underscoring the importance of programs that incorporate both technical and human-centric AI skills.
- Source: https://economicgraph.linkedin.com/resources/linkedin-workforce-report-january-2024

Maryland Department of Labor Employment Projections
- In Maryland, AI-focused roles, such as AI Engineers and Data Scientists, are projected to grow by 28% from 2023 to 2033, adding approximately 4,800 new jobs.
- The state's emphasis on becoming a tech hub aligns with the demand for educational programs that equip students with AI skills, particularly in IT operations, cybersecurity, and cloud-based AI solutions.
- Source: https://www.labor.maryland.gov/lmi/iandoproj/

The evidence from these surveys and reports demonstrates a clear demand for educational programs in AI for IT operations, with substantial anticipated growth in job vacancies. Establishing such a program will address both current and future labor market needs, providing students with skills that align with evolving industry requirements.

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

Current Supply of Graduates
- According to the National Center for Education Statistics (NCES), the number of graduates in computer science and related fields has steadily increased over the past five years. In the 2021-2022 academic year, approximately 88,633 students earned bachelor's degrees in computer and information sciences in the U.S.
- Source: https://nces.ed.gov/programs/digest/d20/tables/dt20_325.35.asp
- AI-specific programs have expanded significantly in recent years, with an estimated 5,000 to 10,000 graduates completing degrees or certifications focused on AI, machine learning, and data science in 2022. This estimate aligns with data from the Stanford Institute for Human-Centered Artificial Intelligence (HAI), which tracks AI education trends across U.S. institutions.
- Source: https://hai.stanford.edu/research/ai-index-report

- In Maryland, roughly 2,000 students graduated with computer science and IT-related degrees in 2022, with about 300 specializing in AI, data science, or related fields, according to the Maryland Higher Education Commission (MHEC).

Source: https://mhec.maryland.gov/publications/Documents/Research/AnnualPublications/2022DataBook.pdf

Projected Supply of Graduates (2023-2033)
- National Projections: Based on enrollment trends and the expansion of AI-related programs, the number of graduates specializing in AI, machine learning, and data science is expected to increase by 30% over the next decade. By 2033, an estimated 120,000 graduates are projected to earn degrees annually in computer science fields, with approximately 10,000 focusing specifically on AI-related disciplines.

- In Maryland, the number of AI-focused graduates is projected to grow by 35% over the next 10 years, in line with the state's strategic goals of becoming a leading tech hub. This could result in approximately 400 to 450 AI-focused graduates per year by 2033.
- Growth in AI-related education is supported by initiatives like the AI for Workforce Program and the Maryland Tech Hub, which aim to boost enrollment in AI and IT operations programs across local institutions.

Source: https://www.businesswire.com/news/home/20210803005312/en/Intel-Launches-AI-for-Workforce-Program-for-Students-in-18-Community-Colleges

Factors Influencing Graduate Supply
- The increase in AI-related programs at both undergraduate and graduate levels, along with the growing number of online and hybrid courses, is expected to support a higher output of qualified graduates.
- The growth of specialized training programs, boot camps, and certification courses in AI and IT operations is projected to enhance the supply of job-ready graduates, contributing to the overall workforce in the AI sector.
- Data from the U.S. Bureau of Labor Statistics (BLS) supports this projected growth, indicating significant demand for computer and information research scientists, which will drive the need for more graduates.

Source: https://www.bls.gov/ooh/computer-and-information-technology/computer-and-information-research-scientists.htm

The data reflect a steady increase in both the current and projected demand for AI and IT-focused graduates, both nationally and in Maryland. The proposed program aims to meet this growing demand by producing graduates with skills aligned to evolving industry needs.

D.   Reasonableness of Program Duplication:

D.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.

A program title and CIP search was performed in October 2024, on MHEC's online Academic

Program Inventory. We used CIP codes 11.0102 and 11.0103, as well as keywords such as Information Technology and Artificial Intelligence. We found two undergraduate programs with potential similarities, and they are included in the following table. We also included the comparison of our program to three undergraduate programs for which the institutions sent a Letter of Intent (LOI), but that were not yet accompanied by a proposal. These three programs were also included in the table below.

Institution	Program	Differentiation
Capital Technology University	B.S. in Artificial Intelligence Modality: In person	The curriculum focuses primarily on AI algorithms and implementations, with significant emphasis on computer science and mathematics. Our program focuses on the integration of AI capabilities in an IT infrastructure and its operations. The geographic location is also different, as we intend to serve the Baltimore metropolitan area while CTU serves DC and neighboring Maryland counties.
University of Maryland Global Campus	B.S. in Artificial Intelligence Modality: Online	The program focuses on AI Applications and AI Development. Even though our program includes some programming courses, our main focus is to teach students how to integrate AI capabilities into an IT infrastructure, which often includes making it available as a service. Our program also focuses on networking, cyber security, and cloud and edge computing solutions. The program at UMGC is offered online, while our program will be offered in person.
Submitted LOIs		
Bowie State University	B.S. in Artificial Intelligence	Based on the information available in the LOI, Bowie State University seems to focus their program entirely on computer science. As our program is centered around Information Technology, our approach is significantly different.
University of Maryland College Park	B.A. in Artificial Intelligence	Based on the information available in the LOI, UMCP will focus the B.A. degree entirely on a Liberal Arts approach. Although our program includes a human-centered component, the majority of our curriculum is technical in nature and therefore different from this intended program.

University of Maryland College Park	B.S. in Artificial Intelligence	Based on the information available in the LOI, UMCP will focus the B.S. degree entirely on applied AI and how it relates to other contexts, especially social and of public policy. The program will also focus heavily on mathematics, computing, and engineering. Our program focuses instead on the integration of AI capabilities in an organization's IT infrastructure.

D.2.   Provide justification for the proposed program.

The International Monetary Fund expects that AI will transform the global economy affecting over 40 percent of jobs around the World through automation or radical transformation. (Source: https://www.imf.org/en/Blogs/Articles/2024/01/14/ai-will-transform-the-global-economy-lets-make-sure-it-benefits-humanity). Employment trends have already recorded significant growth in AI-related positions, with Forbes reporting an increase of 74 percent of jobs that revolve around AI, suggesting the importance of this technology, prompting the need for reskilling and upskilling.

The Bachelor of Science in Artificial Intelligence for IT Operations emphasizes the practical applications of AI in IT infrastructures, focusing on how to use existing hardware and software technologies to enable AI capabilities. These applications are crucial as businesses and government entities transition from traditional models to AI-enhanced operations. The curriculum's emphasis on security, automation, and scalability ensures that graduates are prepared to implement AI effectively in real-world contexts. Additionally, ethical and human-centered components ensure that AI is applied responsibly, with humans guiding the technology rather than being controlled by it.

The program will focus on a range of technologies that span from the end user, such as smart devices that may be in any home, to architectures that are typical of cloud- and edge-computing systems. This wide exposure will prepare students for an end-to-end implementation of AI-based systems, enabling them to become not only technically proficient, but also able to document and articulate processes that span from the fringes to the core of this new form of digital network of interconnected, AI-enabled devices.

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

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

According to the current MHEC Program Inventory, none of the HBIs in the State currently offer undergraduate programs in artificial intelligence. Thus, we do not expect any impact on high-demand HBI programs.

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

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

We expect no effect on the uniqueness and institutional identities and missions of HBIs since none of the HBIs in the State currently provide undergraduate programs that emphasize applications of Artificial Intelligence for Information Technology.

G.   Adequacy of Curriculum Design, Program Modality, and Related Learning Outcomes (as outlined in COMAR13B.02.03.10):

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

This is a new program that is cross-disciplinary in nature. It will be taught by the University of Baltimore's Yale Gordon College of Arts and Sciences faculty from Applied Information Technology, User Experience Design, Mathematics, and Legal, Ethical and Historical Studies. A list of faculty members is reported in section I.

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

The proposed program focuses on the integration of Artificial Intelligence with existing IT infrastructures, so it is essential for students to gather a wholistic view not only of artificial intelligence but in the technical context in which it will exist. The Program Learning Outcomes are the following:

1. Describe different AI algorithms and the context in which they operate, including training and operational needs.
2. Identify hardware and software requirements for AI-enabled systems.
3. Design secure AI-enabled systems that meet the needs of stakeholders.
4. Implement local and distributed AI-enabled systems.
5. Communicate hardware, software, and implementation requirements related to AI-based projects.
6. Articulate ethical and human-centered factors related to AI-enabled systems.

The program will be offered in-person only.

G.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

Program goals have been mapped across all courses in the curriculum and assessments for each competency and goal occur within courses. Rubrics are developed by the department and used to assess artifacts collected by faculty bi-annually. Departmental assessment meetings discuss ways to improve student outcomes across the curriculum and improvements are not limited to the

courses where the assessment occurs. Finally, the Yale Gordon College of Arts and Sciences conducts bi-annual Assessment Retreats where assessment results are presented to a broad constituency.

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

Program Requirements

Course	Title	Credits
AITC 151	Computer Programming I	3
AITC 251	Computer Programming II	3
AITC 253	Client-Side Web Development	3
AITC 270	Basic Concepts of Artificial Intelligence	3
AITC 310	Computer Networks	3
AITC 317	Virtualization and Cloud Computing	3
AITC 332	Computer Security	3
AITC 356	Database Systems	3
AITC 372	AI Algorithms and Implementations	3
AITC 375	IoT, Smart Devices, and Sensor Data	3
AITC 453	Server-Side Web Programming	3
AITC 470	Cloud and Edge Intelligence	3
AITC 471	Software Development and AI	3
AITC 475	AI and Cyber Security	3
AITC 491	Capstone in AI	3
GAME 324	Designing for Humans	3
INSS 350	Fundamentals of Machine Learning for Business	3
MATH 115	Introductory Statistics	3
MATH 321	Mathematical Structures for Information Technology	3
PHIL 450	AI and Philosophy	3
	Total Credits	*60*

Course Descriptions

AITC 151, Computer Programming I (3 credits)
A fundamental programming course focused on developing computational skills in problem-solving, algorithm development and program design, and principles of good programming. Topics include program flowcharting, pseudo-coding, input / output techniques, control structures, data types, modularization, procedures and file handling. A high-level programming language will be introduced and used throughout the course to supplement the theoretical foundations.

AITC 251, Computer Programming II (3 credits)
Introduces the syntax of an object-oriented language and teaches object-oriented programming

concepts and design. To teach these concepts, the course presents an object-oriented programming language such as Java, C#, or C++, while developing problem-solving and algorithm design skills.

AITC 253, Client-Side Web Development (3 credits)
Introduces students to the basics of client-side web programming by looking at the Document Objects Model's structure and adding dynamic properties. Topics include HTML, CSS and JavaScript, with an introduction to frameworks such as JQuery and React.

AITC 270, Basic Concepts of Artificial Intelligence (3 credits)
Offers an introductory survey of artificial intelligence (AI), exploring its foundational concepts, key models, and real-world applications. Students examine different AI systems, their roles in transforming society, and the ethical considerations surrounding their use. Topics include AI's impact on human-machine interaction, data analysis, and autonomous systems, as well as discussions on the future of AI. This course is designed for students seeking a broad understanding of AI and its societal implications.

AITC 310, Computer Networks (3 credits)
An introduction to computer networks, including network operating system concepts. Topics include network components, layered network architectures, topologies, network protocols, Ethernet, wireless transmission, local area networks, wide area networks, switching and routing, network configuration and troubleshooting. Course also prepares students for CompTIA's Network+ certification exam.

AITC 317, Virtualization and Cloud Computing (3 credits)
This course exposes students to current topics and technologies in virtualization and cloud computing. Students become familiar with the various aspects of cloud computing systems and analyze new approaches. Topics include the concepts and principles of virtualization; the mechanisms and techniques of building virtualized systems; cloud architectures and service models, the economics and benefits of cloud computing, public cloud infrastructures such as Amazon Web Services, Google Cloud Platform and Microsoft Azure; free cloud services and open source software; and security in cloud computing.

AITC 332, Computer Security (3 credits)
Introduces students to core principles and practices in computer and network security. Covers the fundamentals of computer/network security including general security concepts; threats and vulnerabilities; application, data and host security; access control and identity management; basics of cryptography; and compliance and operational/organizational security. Current topics in computer security such as cloud computing security and application programming development security also are discussed. Course materials prepare students for the vendor-neutral CompTIA Security+ industry certification exam.

AITC 356, Database Systems (3 credits)
Introductory course to database design and implementation. Topics include modeling using Entity-Relationship (E-R) diagrams, query formulation with Structured Query Language (SQL), database planning and design, normalization, creating and maintaining a database administration. Basic concepts of the relational data model and SQL are discussed in detail. Students plan,

design and test a relational database and associated application components. They also obtain hands-on experience using a current version of Microsoft SQL Server Database Management System or another system.

AITC 372, AI Algorithms and Implementations (3 credits)

Introduces students to data structures and algorithms, which are the programmatic components that enable computers to mimic human intelligence. Students become familiar with complexity as a metric to compare algorithmic and structural implementations. Topics include recursion, linear and non-linear data structures, and algorithms for supervised, unsupervised, and reinforcement learning. The course utilizes multiple object-oriented programming languages.

AITC 375, IoT, Smart Devices, and Sensor Data (3 credits)

Exposes students to the emerging technologies and trends associated with the Internet of Things (IoT), smart devices, and sensor data. Topics include IoT architecture, IoT communication protocols, smart devices and their practical functions, IoT-enabled AI applications, integration with cloud services, sensor data collection and analysis, and IoT applications and case studies. Ethical considerations in IoT deployment and sensor data security issues are also discussed.

AITC 453, Server-Side Web Programming (3 credits)

Focuses on the development of applications that reside on the server, powering the logic layer of modern software solutions based on three-tier and multi-tier architectures. Students learn server-side programming languages and frameworks, while balancing performance, security, and maintainability. Technologies include PHP, JSON, Node.JS, and various database query languages. Requires students to implement web applications in phases.

AITC 470, Cloud and Edge Intelligence (3 credits)

Focuses on IT infrastructures and computing environments that leverage large-scale resources to enable AI operations. Explores the foundations of distributed and parallel systems identical to cloud-based computing environments, which are essential in handling large volumes of data processing and the training of AI models. Introduces the differences between cloud-based and edge-based systems from the design and cyber security perspective. The course utilizes multiple object-oriented programming languages.

AITC 471, Software Development and AI (3 credits)

Focuses on the utilization of artificial intelligence (AI) in two ways: as an assistant to application development and as an entity that extends the capabilities of the application that is being developed. Introduces AI as a tool to identify, collect, and manipulate data that will power applications. Discusses how the process of developing, deploying, and maintaining applications can be integrated with AI tools. The course focuses on user-facing applications, such as interactive websites, as well as autonomous software, such as autonomous agents. The course utilizes multiple object-oriented programming languages.

AITC 475, AI and Cyber Security (3 credits)

Introduces the conceptual and technological aspects of artificial intelligence (AI) and their application to cybersecurity. Provides a mix of theoretical principles, practical exercises, and applied case studies. Ethical and privacy issues in AI and cybersecurity integration are also discussed. Students develop familiarity with research and information resources to forecast

emerging problems and strategies in this area.

AITC 491, Capstone in AI (3 credits)

Provides students with hands-on work experience in applied artificial intelligence. Students will participate in an in-house project managed by the instructor. Students attend regular class meetings as part of their project work. Alternatively, students may arrange placement with an external organization, subject to written approval by the instructor and an official of the organization.

GAME 324, Designing for Humans (3 credits)
Introduces key concepts of human/computer interaction, including how humans interact with technology to find and process information. It also introduces the concepts of systematic software testing to students of applied information technology and students of interactive simulation and computer gaming. Students learn principles of interface and software construction and apply them to practical problems of software or game evaluation in the process of learning principles that underlie good interaction and play design. Readings cover theory of human/computer interaction, interaction design and usability testing.

INSS 350, Fundamentals of Machine Learning for Business (3 credits)
This course provides a systematic understanding of why and when machine learning models can help business decision-making processes in various areas. Students learn the use of unsupervised techniques, such as clustering, association, and dimensionality reduction, and supervised techniques, such as regression and classification. Algorithms covered include logistic regression, support vector machines, decision trees, K-Means, KNN, random forest, etc. Hands-on exercises using Python also teach students how to perform machine learning analyses, from data preprocessing to model evaluation. An introduction to deep learning concepts, including tools such as neural networks, caps off the course.

MATH 115, Introductory Statistics (3 credits)
An overview of descriptive and inferential statistics. Statistics is inherently applied the course emphasizes solutions to problems in a variety of applied settings. Measures of location and variability, probability distributions, correlation and regression, sampling and sampling distributions, hypothesis testing and estimation with confidence intervals for means and proportions are explored.

MATH 321, Mathematical Structures for Information Technology (3 credits)
A study of number systems, sets, Boolean algebra and propositional calculus, relations and databases, and directed and undirected graphics with applications to algorithms and networks.

PHIL 450, AI and Philosophy (3 credits)
Examines the most recent developments in artificial intelligence (AI) in relation to philosophical questions prompted by this far-reaching technology. What is mind and consciousness in human beings, and to what extent does AI have the potential to replicate these qualities? What are the most important ethical, legal, and political impacts raised by AI developments? The class guides students in thinking more clearly and systematically about how to address these and other philosophical questions related to AI. Students read a wide variety of classic and contemporary texts from diverse philosophical traditions. Course activities include extensive use of AI.

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

To become eligible for graduation, undergraduate students at The University of Baltimore are required to complete 38 credits of general education as well as five courses that meet graduation requirements criteria specified in the UBalt Learning Goals.

The categories included in the General Education group are the following:
- Arts & Humanities [AH] (6 credits)
- Upper-Division Ethics [UETH] (3 credits)
- Biological & Physical Sciences [BPS] (3 credits)
- Biological & Physical Sciences Lab [BPSL] (4 credits)
- English Composition [COMP] (3 credits)
- English Composition, Upper Division [UCOMP] (3 credits)
- Mathematics [MA] (3 credits)
- Social & Behavioral Sciences [SBS] (6 credits)
- General Education Electives [ELECGE] (7+ credits)

The categories included in the Graduation Requirements group are the following:
- Global Awareness and Diverse Perspectives [GD]
- Information Literacy [IL]
- Oral Communication [OC]
- Technological Fluency [TF]
- Capstone Experience

When designing the proposed program, we were mindful of such requirements and included the following courses, which also fulfill General Education requirements:
- MATH 115, which meets the Mathematics [MA] requirement
- AITC 270, which meets the General Education Electives [ELECGE] requirement

This allows students enrolled in the program to fulfill 6 credits towards their degree as well as their General Education requirements, leaving 32 credits for the student to fulfill by selecting courses of interest. We chose not to include other specific courses, as students should have the ability to complete courses in disciplines that are most appropriate to their personal, professional, or academic interests, as appropriate in an institution such as The University of Baltimore. This choice also helps students transferring into the University by accepting as many General Education courses as possible, and therefore reducing the number of credits necessary beyond the program requirements.

Regarding Graduation Requirements, the following courses required by the program meet those criteria:
- AITC 332, which meets the Global Awareness and Diverse Perspectives [GD] requirement
- GAME 324, which meets the Information Literacy [IL] requirement
- AITC 491, which meets the Oral Communication [OC] requirement

- AITC 151 and AITC 270, which meet the Technological Fluency [TF] requirement
- AITC 491, which meets the Capstone Experience requirement

As the Program includes courses that match each Graduation Requirement, the students have no further credit requirements associated with this category.

In summary, students are not overburdened by program requirements or general education requirements. The following list reports an overview of the calculations:
- Program requirements: 60 credits
- General Education requirements: 32 credits remaining
  - 6 credits are met by the Program requirements
- Graduation Requirements: 0 credits remaining
  - All the requirements are met within the program
- Electives: 28 credits
  - Students can complete one or more minors, take further AITC courses, or complete courses at their own will
  - Transfer students may not have to take any elective courses, as their incoming credits may count towards this group

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

Not applicable.

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

Not applicable.

G.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.*

UBalt's website is a valuable resource that offers students a wealth of up-to-date information. This includes details about program curricula, course and degree requirements, expected technology competencies and skills for each degree, technical equipment prerequisites for courses, academic support services, available financial aid resources, comprehensive cost breakdowns, and payment policies. Additionally, students can access information about our state-of-the-art learning management system (LMS), Canvas, which serves as a vital platform for their educational journey.

Within Canvas, we provide a range of student tutorials to assist with LMS navigation, ensuring students can make the most of its features. Moreover, individual courses can offer resource materials through this platform, further enhancing the learning experience.

Our commitment to student success extends to ensuring accessibility. The University's Office of Disability and Access Services maintains a dedicated website and physical office with regular office hours. We also provide access to video and audio technologies to assist students who require accommodation.

The Division of Student Support and Access Services, along with the Bogomolny Library, offer a diverse array of academic and other support services. These encompass access to counseling resources, available 24/7, to address the various needs of our students and foster their overall well-being. The Office of the Dean will work with the website content manager to ensure that the B.S. in Artificial Intelligence for IT Operations curriculum is developed and regularly maintained. The catalog will be revised to reflect the new program requirements, and an updated Guide to Graduation for the B.S. in Artificial Intelligence for IT Operations will be provided. Information about course formats and technology assumptions, as well as any equipment requirements, will be available, as usual, to students in the course schedule. Each student will receive a syllabus that outlines student learning outcomes, course format, technology needs, and campus resources. These resources include the Office of Disability and Access Services, the Academic Support Center (which has a Writing Center), and the Office of Technology Services.

G.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 program director will communicate with the College of Art and Sciences and university marketing departments to ensure that any marketing materials, such as program fact sheets, reflect the new curriculum. See above for information about the catalog and website. The catalog is updated annually and posted online, in addition to the routine program web page updates.

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

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

Faculty in the proposed Program have already reached out to the Department of Computer Science, Data Science and Information Technology at the Community College of Baltimore County (CCBC) for articulation with their A.S. degrees in "Computer Science" and "Information Technology," as well as their proposed degree in "Artificial Intelligence," which is currently under review by MHEC. A letter of support from CCBC is attached to this document.

We intend to establish an articulation agreement with Baltimore City Community College to create a pathway to our Program from their "Information Technology" A.S. degree. We intend to include Reverse Transfer agreements with these Community Colleges to ensure that institutions are recognized for their work and students receive all the credentials that they have earned along their academic paths.

The Program is within the scope of Accelerated BS-MS programs within the University of Baltimore, as articulated by the University System of Maryland's rules for Accelerated Programs. Under this Policy, an undergraduate student with a GPA of 3.5 or higher is allowed to take up to

9 graduate credits and double count them towards their graduate degree. The following graduate programs are candidates for acceleration:

- M.S. in Interaction Design & Information Architecture
- M.S. in Artificial Intelligence for Business
- M.S. in Cybersecurity Leadership
- M.S. in Cyber Forensics

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

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

Faculty Member	Appointment Type	Field	Status	Terminal Degree	Academic Rank	Courses to be Taught
Giovanni Vincenti	Tenured	Applied Information Technology	Full-time	D.Sc.	Associate Professor	Computer Programming courses, AITC 270, AITC 356, AITC 372, AITC 375, AITC 470, AITC 471, AITC 475, AITC 491
Mohammed Ketel	Tenured	Applied Information Technology	Full-time	Ph.D.	Professor	AITC 310, AITC 317, AITC 332, AITC 375, AITC 470, AITC 475, AITC 491
Cory Newman	Contractual	Applied Information Technology	Full-time	M.S.	Lecturer	Computer Programming courses, AITC 270, AITC 372, AITC 471
Greg Walsh	Tenured	User Experience Design	Full-time	Ph.D.	Associate Professor	Computer Programming courses, AITC 270, GAME 324
Bridget Blodgett	Tenured	User Experience Design	Full-time	Ph.D.	Associate Professor	Computer Programming courses, AITC 270, GAME 324
Haitham Alkhateeb	Tenured	Mathematics	Full-time	Ph.D.	Professor	MATH 115, MATH 321
Steven Scalet	Tenured	Legal, Ethical and Historical Studies	Full-time	Ph.D.	Professor	PHIL 450

Joshua Kassner	Tenured	Legal, Ethical and Historical Studies	Full-time	J.D., Ph.D.	Professor	PHIL 450
Danielle Fowler	Tenured	Information Systems	Full-Time	Ph.D.	Associate Professor	INSS 350
Cong Zhang	Tenure-Track	Machine Learning and AI	Full-Time	Ph.D.	Assistant Professor	INSS 350

I.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*

The University of Baltimore provides periodic training to its faculty on the use of the latest online and face-to-face teaching tools as well as professional development opportunities through attending national conferences and training, such as for example, Coursera, EdX, etc. In addition, the faculty is afforded opportunities to attend continuing professional education sessions through other providers of technical skills training, such as Coursera and Udemy.

b) *The learning management system (LMS)*

The University of Baltimore periodically provides necessary training in its Learning Management System, Canvas, through its Center for Excellence in Learning, Teaching and Technology (CELTT) as well as periodic quality reviews of the faculty's utilization of LMS.

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

Not applicable.

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

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

The program does not require additional library resources beyond those already provided by the University of Baltimore's Bogomolny Library, which provides an adequate level of access to relevant academic, peer-reviewed resources such as journals and conference proceedings.

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

K.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.*

The University of Baltimore's current facilities provide excellent conditions for students in the proposed Program. Students will have access to two dedicated computer labs, currently in use exclusively to the Applied Information Technology program. The labs are utilized to teach courses in computer programming, cyber security, database systems, networking, and system administration. One lab is connected to the Internet, and the second is isolated from the University network to let students experience tools and techniques associated with cybersecurity. Both labs are equipped with high-end desktop systems, dedicated networking equipment, network-attached storage solutions, and four dedicated servers. We are currently working on a lab refresh that will include high-end hardware to facilitate the deployment of technologies and tools used in artificial intelligence.

The instructors' stations in our classrooms are adequately equipped for face-to-face instruction, and they have up-to-date IT infrastructure. The University provides students with loaner laptops whenever they need them. The University of Baltimore provides every student with an email address, access to our learning management system (Canvas), and free access to Office 365 software (Word, Excel and PowerPoint). All faculty and credit-earning students are provided with an institutional e-mail account that integrates with the institution's learning management system. We will use Canvas to deliver material that is supplemental to our face-to-face instruction, such as peer-reviewed articles, videos related to topics discussed during meetings, and step-by-step tutorials.

K.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

Not applicable.

L.   Adequacy of Financial Resources with Documentation (as outlined in COMAR13B.02.03.14)

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

Table 1: Program Resources					
Resource Categories	**FY 2026**	**FY 2027**	**FY 2028**	**FY 2029**	**FY 2030**
1. Tuition and Fee Revenue (c + g below)	$103,960	$163,389	$214,322	$266,795	$320,856
a. Number of F/T students	5	8	10	12	14

b. Annual Tuition/Fee Rate	$9,992	10144	10299	10457	10618
c. Total F/T Revenue (a*b)	$49,960	$81,150	$102,986	$125,479	$148,647
d. Number of P/T students	10	15	20	25	30
e. Credit Hour Rate	450	457	464	471	478
f. Annual Credit Hours	12	12	12	12	12
g. Total P/T Revenue (d*e*f)	$54,000	$82,238	$111,335	$141,317	$172,208

L.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					
Resource Categories	**FY 2026**	**FY 2027**	**FY 2028**	**FY 2029**	**FY 2030**
1. Faculty (b + c below)	$8,203	$29,573	$44,533	$61,628	$58,066
a. Number of FTE	0	0	0	0	0
b. Total Salary	$7,600	$27,400	$40,600	$57,100	$53,800
c. Total Benefits	$603	$2,173	$3,933	$4,528	$4,266
2. Admin Staff (b + c below)	$0	$0	$0	$0	$0
a. Number of FTE	0	0	0	0	0
b. Total Salary	$0	$0	$0	$0	$0
c. Total Benefits	$0	$0	$0	$0	$0
3. Support Staff (b + c below)	$0	$0	$0	$0	$0
a. Number of FTE	0	0	0	0	0
b. Total Salary	$0	$0	$0	$0	$0
c. Total Benefits	$0	$0	$0	$0	$0
4. Technical Support and Equipment	$0	$3,228	$3,288	$3,336	$4,212
5. Library	$0	$0	$0	$0	$0
6. New or Renovated Space	$0	$0	$0	$0	$0
7. Other Expenses	$285	$522	$822	$834	$1,053
Total (Add 1 through 7)	$8,488	$33,323	$48,643	$65,798	$63,331

This program can be offered with no new faculty and does not incur an additional cost.

M.   Adequacy of Provisions for Evaluation of Program (as outlined in COMAR

13B.02.03.15).

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

The University has a shared governance process for curriculum approval. Both new courses and new programs are required to submit student learning outcomes (SLOs), which are then evaluated by faculty curriculum committees, plus staff in the deans' and provost's office.

The assessment of program student learning outcomes is faculty driven. Assessment generally occurs within courses, but assessment results are shared and evaluated within the Yale Gordon College of Arts and Sciences.

Faculty are evaluated annually by their supervisor and dean. In addition, policies for tenure-track and tenured faculty call for in-depth peer review at regular intervals.

All courses undergo student evaluation using the college-wide software tool Explorance Evaluations. Students complete evaluations of their course and the instructor at the end of each semester, using an online form. Data from these evaluations are incorporated in the annual chair's evaluation of faculty and are used in faculty promotion and tenure decisions.

M.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.

Student learning outcomes are assessed over a two-year cycle using direct and indirect measures. The primary assessment measures are direct assessments administered within courses, evaluated by faculty, reviewed by programs, and affirmed by the Yale Gordon College of Arts and Sciences as a whole.

Retention is a key metric of the quality of our courses and faculty and retention data is reviewed on an ongoing basis, as are student evaluations of faculty. These evaluations have highlighted improvements that can be implemented across the curriculum in course delivery and feedback.

As we implement the new curriculum, we have created a new assessment plan. Embedded assessments will be deployed beginning in Fall 2025 for the new program goals and the faculty will use this data to drive curriculum improvement.

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

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

The University of Baltimore is a diverse institution, with an average undergraduate age of 30, and a majority-minority undergraduate population. Approximately 47 percent of UBalt students are African American and 32 percent white.

The University serves non-traditional students, which includes many working adults. UBalt's current strategic plan underlines the importance of diversity, equity, and inclusion, and one of the strategic goals is specifically to strengthen UBalt's commitment to these core values.

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

O.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.

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

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

Not applicable.

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

Not applicable.

October 5, 2024

Dear Dr. Vincenti,

I am writing to express that the Computer Science / Information Technology Department (CSIT) at the Community College of Baltimore County (CCBC) enthusiastically supports the University of Baltimore's new proposed Artificial Intelligence for IT Operations (AIOps) program. We are excited about this program's opportunities and believe it aligns closely with our academic initiatives and strategic goals.

You introduced us to your AI program, and after reviewing its curriculum and objectives, it is evident that there is significant potential for collaboration between our institutions. CCBC has been working to expand its course offerings and degree programs, including AI and data science. Our upcoming AI program will equip students with the skills and knowledge necessary to excel in this rapidly evolving sector.

There is a clear opportunity for articulation between CCBC and the University of Baltimore, allowing our students in Computer Science, Information Technology, and the forthcoming AI programs to transition into your advanced courses. This articulation will enhance the educational pathways available to our students and strengthen the partnership between our institutions, fostering a collaborative environment for innovation and excellence in AI. CCBC is committed to supporting the University of Baltimore's AI program and looks forward to exploring further avenues for cooperation and mutual growth.

We are excited about the potential collaboration and its positive impact on our students and the field of artificial intelligence.

Sincerely,

Wendy Chin

Wendy Chin
Department Chair
Computer Science Department
Community College of Baltimore County
800 S. Rolling Rd Catonsville, MD 21228
wchin@ccbcmd.edu

UNIVERSITY SYSTEM
of MARYLAND

BOARD OF REGENTS
SUMMARY OF ITEM FOR
ACTION,
INFORMATION, OR DISCUSSION

TOPIC: University of Baltimore proposal for a Master of Science (MS) degree in User-Centered Cybersecurity

COMMITTEE: Education Policy and Student Life and Safety

DATE OF COMMITTEE MEETING: December 3, 2024

SUMMARY: The University of Baltimore seeks approval to introduce a new program, the MS in User-Centered Cybersecurity. This proposed program addresses critical societal needs by advancing the concept of usable security. Traditional cybersecurity solutions often overlook the usability of security tools and systems, particularly for minority and educationally disadvantaged populations, who may not have been considered in the initial design phases of these technologies. By integrating human-centered design into cybersecurity, this program seeks to create systems that are not only secure but also intuitive and user-friendly.

This 30-credit master's program equips professionals with the knowledge and skills to design and implement cybersecurity systems that are not only secure, but also focused on the user experience. Program learning outcomes focus on human-centered security design, research and evaluation, data-driven decision-making, ethical and accessible design, and security usability testing and iteration. By focusing on both technical skills and an understanding of human behavior and interaction, graduates will be better prepared to create systems that users can easily adopt, reducing the risk of security breaches caused by human error. This can create more equitable and inclusive digital environments, making cybersecurity more effective and accessible for everyone.

ALTERNATIVE(S): The Regents may not approve the program or may request further information.

FISCAL IMPACT: No additional funds are required. The program can be supported by the projected tuition and fee revenue.

CHANCELLOR'S RECOMMENDATION: That the Education Policy and Student Life and Safety Committee recommend that the Board of Regents approve the University of Baltimore proposal for an MS in User-Centered Cybersecurity.

COMMITTEE RECOMMENDATION:	DATE: December 3, 2024
BOARD ACTION:	DATE:
SUBMITTED BY: Alison M. Wrynn 301-445-1992	awrynn@usmd.edu

November 12, 2024

Jay A.Perman, M.D. Chancellor
University System of Maryland
3200 Metzerott Road
Adelphi, MD 20783-1690

Dear Dr. Perman:

The University of Baltimore is proposing a new Master of Science in User-Centered Cybersecurity (proposed CIP 11.0105 and proposed HEGIS code 0705.00). This is a 30-credit program that will prepare graduates for roles in cybersecurity and user experience design, given the increasing demand for professionals who can design secure systems that are both effective and user-friendly.

The proposed master's program will equip professionals with the knowledge and skills to design and implement cybersecurity systems that are not only secure but also user-friendly. By focusing on both technical skills and an understanding of human behavior and interaction, graduates will be better prepared to create systems that users can easily adopt, reducing the risk of security breaches caused by human error. As cybersecurity threats continue to evolve, there is a clear need for professionals who can bridge the gap between technical security measures and real-world user behavior, making this program a critical addition to the field.

If you have any questions, please contact Aaron Wachhaus at 410-837-6113 or awachhaus@ubalt.edu.

Sincerely,

p.p. Aaron Wachhaus, Associate Provost - Academic Affairs
Ralph O. Mueller, Senior Vice President and Provost

Encl.
cc: Dr. Candace Caraco, Associate Vice Chancellor for Academic Programs, Academic & Enrollment Services and Articulation

Office of the Provost

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259/306

UNIVERSITY SYSTEM OF MARYLAND INSTITUTION PROPOSAL FOR

<u>X</u>   New Instructional Program

       Substantial Expansion/Major Modification

_____   Cooperative Degree Program

   X   Within Existing Resources, or
_____

       Requiring New Resources
_____

University of Baltimore
_____
Institution Submitting Proposal

MS in User-Centered Cybersecurity Program
_____
Title of Proposed Program

Master's Degree	**Fall 2025**
Award to be Offered	Projected Implementation Date

0705.00	**11.0105**
Proposed HEGIS Code	Proposed CIP Code

<u>Yale Gordon College of Liberal Arts & Sciences</u>	Greg Walsh
Department in which program will be located	Department Contact
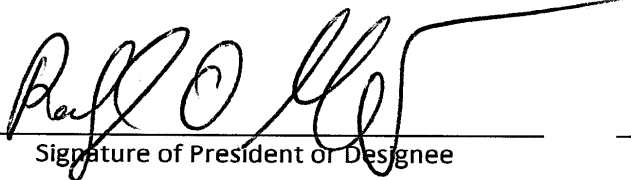
410-837-5473	gwalsh@ubalt.edu
Contact Phone Number	Contact E-Mail Address

_____ | 11/11/2024
Signature of President or Designee

User-Centered Cybersecurity Program Proposal

A. Centrality to Institutional Mission and Planning Priorities

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

As technology increasingly permeates every aspect of our lives, ensuring the secure use of digital systems has become a pressing concern. Despite advances in technical security measures, human error and usability issues remain significant cyber-attack vulnerabilities. This gap is because humans are often unaware of their vulnerabilities or fail to follow best practices due to poorly designed interfaces and systems. To effectively mitigate these risks, technology professionals must develop an understanding of the people they serve – their needs, behaviors, and limitations. By incorporating user-centered design principles into cybersecurity topics, we can empower professionals with the knowledge and skills to create more secure, usable technologies.

The University of Baltimore's mission statement emphasizes our commitment to providing career-focused education for both aspiring and current professionals. This approach ensures the region benefits from highly educated leaders who contribute significantly to the broader community. The landscape of government, industry, and education-related cybersecurity issues continues to expand due to the ever-increasing integration of technology into all sectors. Our proposed program, with its potential to equip individuals with the essential skills to apply usability and user-centered design techniques effectively in the field of information technology and cybersecurity, could have a significant impact on the region and reinforce Maryland's leadership role in these fields and has been designed with consultation from public and private sector professionals.

The Master of Science in User-Centered Cybersecurity is closely aligned with the University of Baltimore's mission to provide career-focused education that prepares professionals for meaningful contributions to the workforce and community. This program is designed to address the increasing demand for cybersecurity professionals who not only possess technical expertise but also understand the human factors that influence cybersecurity risks. By emphasizing user-centered design principles and usability in security systems, the program ensures that graduates can design solutions that are both effective and accessible to end users.

The University of Baltimore is dedicated to serving the needs of the broader community by producing highly educated leaders who can contribute to regional and national industries. With Maryland being a hub for cybersecurity, the need for professionals who can bridge the gap between technical security measures and human behavior is crucial. This program will help the institution fulfill its mission by preparing students to enter the workforce with a specialized skill set that is highly relevant to current industry needs. As

technology continues to permeate all sectors, cybersecurity professionals must develop solutions that account for both technical vulnerabilities and user behaviors, which is a key focus of this program.

The program supports several key goals outlined in Maryland's State Plan for Higher Education, particularly in the areas of access, success, and innovation. The plan emphasizes the importance of providing equitable access to high-quality, affordable education, and the University of Baltimore's cybersecurity program is designed with this in mind. The dual-modality format, offering both in-person and online courses, makes the program accessible to a wider range of students, including working professionals and those from underserved populations. This approach aligns with the state's goal of increasing access to education for all Maryland residents.

Additionally, the program contributes to the success of the state plan by equipping students with the practical skills necessary for career advancement. By focusing on usability and user-centered design in cybersecurity, the program ensures that graduates are prepared to meet the challenges of an evolving industry and excel in their careers. The state plan also highlights the need for innovation in education to keep pace with workforce needs, and this program addresses this by offering a unique focus on the human elements of cybersecurity. This innovative approach positions the University of Baltimore as a leader in cybersecurity education and directly supports the state's goal of fostering cutting-edge academic programs that prepare students for the jobs of the future.

The Master of Science in User-Centered Cybersecurity is not only a critical addition to UBalt's academic offerings but also a vital contribution to Maryland's broader higher education landscape. By addressing a growing need in both the regional and national cybersecurity sectors, the program helps fulfill both the institution's mission and the state's objectives for advancing education, workforce development, and community engagement.

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

The proposed Master of Science in User-Centered Cybersecurity directly supports the University of Baltimore's strategic goals, particularly those outlined in its mission and strategic plan. UBalt's strategic priorities emphasize career-focused education, community engagement, and leadership development, all of which are at the core of this program.

First, the university's strategic goal to provide career-focused education is realized through this program's alignment with the growing needs of the cybersecurity industry. The program is designed to equip students with the specialized skills necessary to succeed in the rapidly expanding field of cybersecurity. As Maryland is a hub for technology and cybersecurity, there is a growing demand for professionals who not only understand technical security measures but also how usability and human factors influence security vulnerabilities. By preparing students to address these challenges, the

program ensures that UBalt remains a leader in providing relevant, future-focused education.

Second, the program supports the institution's goal of community and civic engagement by responding to the cybersecurity needs of both the public and private sectors. Maryland, as a leader in the cybersecurity field, requires professionals who can contribute to securing digital systems across multiple sectors, including government, healthcare, and education. The program's focus on user-centered design in cybersecurity addresses the human factors that can be exploited in cyber-attacks, ensuring that graduates are not only technically proficient but also able to engage with and serve the community by improving the security and usability of systems that affect everyday users. This aligns with UBalt's commitment to producing graduates who can make a positive impact on their communities.

Furthermore, the university's strategic priority of developing leaders who can thrive in their fields is central to this program. The Master of Science in User-Centered Cybersecurity is designed to produce graduates who are not just capable of following industry trends but also leading innovation in the field. By focusing on both usability and technical security, the program produces professionals who can bridge the gap between cybersecurity and user experience, making them highly valuable in leadership roles within organizations.

There is evidence that this program is an institutional priority, demonstrated by its alignment with UBalt's long-term focus on technology-driven education and workforce development. The university has a strong history of offering programs in interaction design and information architecture, as well as a Bachelor's in Applied Information Technology, all of which have been integral to serving the region's technology workforce. The development of this new graduate program is a natural extension of the university's commitment to advancing education in fields that meet the evolving needs of the community and industry.

Additionally, the program proposal has been developed in consultation with both public and private sector professionals, further affirming its alignment with industry needs and its priority status within the institution. This collaborative development ensures that the program is not only aligned with UBalt's strategic goals but also meets the demands of the current job market, making it a high-priority initiative for the university.

By supporting UBalt's strategic goals of career readiness, community impact, and leadership development, the Master of Science in User-Centered Cybersecurity positions the university as a leader in innovative education, directly aligning with its mission and long-term strategic objectives.

Provide a brief narrative of how the proposed program will be adequately funded for at least the first five years of program implementation.

The program, in its current configuration, will be managed by our existing faculty lines, thereby eliminating the need for additional resources in terms of new faculty hires. Our current faculty members possess the capability to effectively instruct within the program, as we can reassign them from other programs as needed. Furthermore, we are prepared to leverage adjunct faculty members as needed to ensure the program's successful delivery. Please find detailed financial information in Section L of this proposal.

Provide a description of the institution's commitment to:
a) ongoing administrative, financial, and technical support of the proposed program

The program's needs will be met within the capacity of the existing faculty's teaching loads. To the extent necessary, overload compensation will be utilized.

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

We are committed to offering the program as long as reasonably necessary to build sufficient and sustainable enrollments.

B. Critical and Compelling Regional or Statewide Need as Identified in the State Plan
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 need for a master's program in user-centered cybersecurity is supported by the evolving requirements in the field and the increasing demand for cybersecurity professionals equipped with user-centered design expertise. Maryland, for example, had over 30,000 cybersecurity job openings in 2023, but there was a significant skills gap, with one in four positions going unfilled. The Maryland Department of Labor has actively invested in innovative training approaches, including cyber ranges that provide hands-on experience, which employers value highly. This highlights the critical need for advanced education programs that can produce well-trained professionals who meet the market's demand for skills in cybersecurity (Maryland Department of Labor, 2024).

Moreover, there is a broader national and global trend recognizing the importance of integrating human-centered design into cybersecurity to ensure security systems are not only technically robust but also usable and effective for a diverse range of users. Research indicates that traditional cybersecurity tools are often overly complex and do not adequately account for the human element, which can result in security breaches due to user error or frustration (Morris, 2024). Addressing this through education in user-

centered cybersecurity will equip graduates with the knowledge to design systems that align with how people interact with technology, reducing the likelihood of user-induced vulnerabilities (Haney, 2023).

Recently, NIST changed the name of its *Usable Cybersecurity* program to *Human-Centered Cybersecurity* to better reflect the broader scope of its work beyond usability. This renaming highlights a shift in focus to encompass the entire spectrum of human interactions with cybersecurity systems, including not just usability but also how social, organizational, and technological factors impact cybersecurity. NIST recognized that usability, while critical, is just one piece of the puzzle; a more holistic approach is needed to ensure security systems are effective when interacting with people at every level (Haney, 2023).

The name change underscores the growing recognition that cybersecurity is not just a technical issue but also a human one. This reflects the core need for a program like the proposed *Master of Science in User-Centered Cybersecurity*, which is designed to train professionals to focus on the human aspects of security systems. As NIST's shift indicates, there is an increasing demand for cybersecurity professionals who understand human behavior and can design systems that are secure and user-friendly. The change from "usable" to "human-centered" signals that future cybersecurity efforts must integrate broader human factors, such as cognitive science and social influences, into the design and implementation of security measures.

By emphasizing human-centered design, the proposed program would align with NIST's evolved approach, preparing graduates to address not just usability but the wider range of human factors that impact cybersecurity. This shift illustrates a critical gap in the current training and workforce, where many professionals are technically proficient but lack the skills to design systems that effectively account for human behavior, compliance, and the overall user experience. Therefore, NIST's change reflects an industry-wide recognition of the need for educational programs that focus on human-centered cybersecurity, reinforcing the relevance and importance of your proposed program.

Aurora Infosec, a New Zealand cybersecurity consulting firm argues that **human-centered design** needs to become central to cybersecurity. Their article "**The Future of Cybersecurity: Human-Centred Design**" emphasizes that effective security systems must account for how users interact with technology, prioritizing ease of use to reduce human errors. as this approach directly addresses the core issue of how people interact with security systems. Rather than solely focusing on technical defenses, the human-centered approach aims to design technology that aligns with human behavior, making security systems more intuitive and user-friendly. This shift is critical because many security breaches result not from technical failures but from human errors—82% of breaches involve the human element, such as social engineering attacks, mistakes, or misuse (Petrescu, 2023).

One of their key arguments is that the traditional approach to cybersecurity, which often focuses on changing user behavior through training and awareness programs, is

insufficient. Instead, a more effective long-term solution is to design security systems that are inherently easier for users to navigate and interact with. By applying **human-centered design** principles throughout the software development lifecycle (SDLC), organizations can create security features that are both intuitive and robust. This minimizes the likelihood of user errors, reduces friction between users and security protocols, and ultimately strengthens the overall security posture of organizations (Petrescu, 2023).

Additionally, their article outlines how using behavioral science to influence user behavior—while helpful—is not enough to manage human risks effectively. Instead, security systems must be designed to work with human limitations and cognitive biases, ensuring that users can comply with security protocols without needing extensive training or experience (Petrescu, 2023). This reflects a significant shift in the cybersecurity industry, where the emphasis is moving away from trying to "fix" user behavior and towards building systems that are secure by design and account for human interaction from the outset.

Incorporating **human-centered design** in cybersecurity also tackles the issue of "security fatigue," where users become overwhelmed by complex or intrusive security measures, leading them to circumvent protocols. By making security features more intuitive and reducing the cognitive load on users, human-centered design can reduce these risks (Petrescu, 2023).

Given this clear demand for skills and the state's investment in closing the workforce gap, a master's degree in user-centered cybersecurity would not only meet present needs but also prepare for future challenges in the region and beyond. This advancement in knowledge is critical to addressing both the technical and human factors in cybersecurity, ensuring long-term security solutions that are both effective and usable.

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

As a primarily Black institution (PBI), the University of Baltimore is uniquely positioned to offer students educational pathways that can significantly enhance their social mobility and career opportunities. By providing access to a specialized program like the master's in user-centered cybersecurity, the university can empower students from historically underrepresented communities to enter a high-demand field. Cybersecurity is a rapidly growing industry with excellent job prospects, and equipping students with the skills to design systems that are both secure and usable positions them for leadership roles in the sector. This not only provides graduates with greater earning potential but also helps bridge the digital divide by fostering diversity in an industry that urgently needs it. Through this program, students can gain cutting-edge skills, opening doors to advanced career opportunities while contributing to a more inclusive and equitable workforce.

The proposed master's program in user-centered cybersecurity addresses critical societal needs by advancing the concept of usable security, which focuses on creating more inclusive and equitable digital experiences. Traditional cybersecurity solutions often overlook the usability of security tools and systems, particularly for minority and educationally disadvantaged populations, who may not have been considered in the initial design phases of these technologies. This oversight has contributed to a digital divide, where marginalized groups may struggle with complex security measures that are not user-friendly or accessible (Haney, 2023)(Adams & Sasse, 1999).

Usable security is an essential component of ensuring that all individuals, regardless of their background or level of technical expertise, can engage with cybersecurity in meaningful ways. By integrating human-centered design into cybersecurity, this program seeks to create systems that are not only secure but also intuitive and user-friendly. This approach addresses the barriers that many underserved groups face in adopting secure behaviors, such as managing passwords or identifying phishing attempts, which are often designed without their needs in mind (Morris, 2024) (Science of Security Virtual Organization, n.d.).

Maryland has already recognized the importance of fostering diversity in the cybersecurity workforce. The state's commitment to developing educational programs that reach underrepresented populations, including women, people of color, and individuals with differing abilities, aligns perfectly with the goals of this program. By providing students from these groups with the skills needed to succeed in cybersecurity, the program contributes to a more diverse workforce, which is essential for designing security solutions that reflect the needs of all users.

Ultimately, this program will not only meet the technical and workforce needs of the state but also play a key role in addressing societal inequities by ensuring that cybersecurity systems are accessible to all. Through a focus on usable security and human-centered design, graduates will be equipped to create more equitable and inclusive digital environments, making cybersecurity more effective and accessible for everyone.

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

The creation of a Master's in User-Centered Cybersecurity aligns well with the goals of the Maryland State Plan for Postsecondary Education by addressing the state's need for a highly skilled, diverse workforce. Maryland is a national hub for cybersecurity, with significant job openings that remain unfilled due to a shortage of qualified professionals. The program's focus on user-centered cybersecurity directly responds to this gap by ensuring that graduates are prepared to meet the state's growing demand for cybersecurity experts who can design and implement security solutions that are accessible and effective for all users, including underrepresented populations (U.S. Bureau of Labor Statistics, 2024b).

Furthermore, the Maryland Department of Labor emphasizes the importance of developing inclusive training programs that provide opportunities for populations typically underrepresented in cybersecurity, including women and people of color. This focus on equitable training aligns with the goals of the Maryland State Plan, which advocates for expanding educational opportunities and career pathways for minority and disadvantaged students. The user-centered approach of the proposed master's program ensures that cybersecurity solutions are designed with diverse user needs in mind, thereby fostering inclusion and equity in the field (Morris, 2024).

Additionally, a user-centered cybersecurity masters program aligns with several specific priorities outlined in the Maryland State Plan:

Priority 5: Maintain the commitment to high-quality postsecondary education: By providing students with a comprehensive understanding of cybersecurity principles and practices, a user-centered cybersecurity masters program can help maintain the quality of higher education in Maryland.

Priority 7: Enhance the ways postsecondary education is a platform for ongoing lifelong learning: A user-centered approach encourages continuous learning and professional development, which aligns with this priority.

Priority 8: Promote a culture of risk-taking: By encouraging students to think creatively and develop innovative solutions to cybersecurity challenges, a user-centered cybersecurity masters program can promote a culture of risk-taking.

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.

We expect our graduates to be employed in a variety of industries that rely on cybersecurity professionals, including federal, state, and local government, public institutions, and private industry. Cybersecurity is a critical concern across sectors, from financial services, healthcare, and education to telecommunications and retail. Maryland, in particular, has a high demand for cybersecurity professionals due to its proximity to government agencies and tech-focused private sectors.

Graduates will be particularly well-suited for roles in cybersecurity and user experience design, given the increasing demand for professionals who can design secure systems that are both effective and user-friendly. They may find employment as **Information Security Analysts**, **User Experience (UX) Designers** focused on secure interfaces, and **Computer Network Architects** who are tasked with building secure data

communication networks. These roles often exist in industries like defense, financial services, healthcare, and IT consulting.

Given their specialized knowledge in usability and human-centered design, we expect graduates to enter the workforce in mid-level positions, such as **security analysts**, **cybersecurity consultants**, or **UX security designers**. Over time, their unique expertise may allow them to move into management roles, such as **cybersecurity project managers** or **user-centered security leads** within organizations.

With cybersecurity-related jobs projected to grow significantly, including a 35% increase in the number of **Information Security Analysts** (U.S. Bureau of Labor Statistics, 2024a), and with Maryland having one of the highest concentrations of cybersecurity professionals (U.S. Bureau of Labor Statistics, 2024b), we anticipate that our graduates will be highly competitive in the job market. The annual mean wage for cybersecurity roles in Maryland is around $138,000, providing significant financial incentives for professionals in this field (U.S. Bureau of Labor Statistics, 2024b)(U.S. Bureau of Labor Statistics, 2024).

Moreover, as organizations increasingly recognize the need for systems that prioritize the user experience without compromising security (Haney, 2023)(Morris, 2024)(Petrescu, 2023), graduates will be in high demand for their ability to bridge the gap between technical security measures and human usability, ensuring that systems are secure and intuitive.

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

Based on comprehensive analysis and alignment between cybersecurity roles and their corresponding Bureau of Labor Statistics (BLS) codes, several key positions in the cybersecurity field necessitate training in User-Centered Design (UCD) due to their direct impact on user interaction with systems and security protocols. These positions include:

- **Cyber Defense Analyst**, **Cyber Defense Forensics Analyst**, **Incident Responder**, **Security Architect**, **Systems Security Analyst**, and **Vulnerability Assessment Analyst**, mapped to BLS code **15-1212: Information Security Analysts**.
- **Information Systems Security Manager**, **IT Project Manager**, and **Cyber Policy and Strategy Planner**, mapped to **BLS code 11-3021: Computer and Information Systems Managers**.
- **Systems Requirements Planner**, mapped to **BLS code 15-1211: Computer Systems Analysts**.
- **Software Developer** and **Systems Developer**, mapped to **BLS code 15-1252: Software Developers**.

Professionals in these roles are responsible for designing, implementing, or managing security systems that impact end users. As cybersecurity threats continue to evolve, UCD training becomes imperative for equipping these professionals with the necessary skills to

create intuitive and user-friendly solutions, reducing the risk of user errors and enhancing security.

Demand in Maryland and the MD-VA-DC-WV Region:
According to the May 2023 **Occupational Employment and Wage Statistics (OEWS)**, Maryland has one of the highest concentrations of **Information Security Analysts**, with a **location quotient of 2.55** (indicating a demand 2.55 times the national average)(U.S. Bureau of Labor Statistics, 2024). The surrounding region, including Washington, D.C., Virginia, and West Virginia, shows an even greater concentration, with a **location quotient of 4.66** (U.S. Bureau of Labor Statistics, 2024c). This suggests a significant demand for cybersecurity professionals in the region, particularly in roles that require UCD training.
Furthermore, in Maryland alone, there are approximately **7,890 Information Security Analysts**, with an annual mean wage of **$138,180** (U.S. Bureau of Labor Statistics, 2024b) (U.S. Bureau of Labor Statistics, 2024). Similarly, **Computer Network Architects**—who are also responsible for designing secure networks—are in high demand, with an average annual wage of **$151,840** (U.S. Bureau of Labor Statistics, 2024a). These data underscore the lucrative opportunities available for professionals equipped with UCD expertise in the cybersecurity sector.

BLS Job Title	Common Job Titles	Maryland Need	MD-VA-DC-WV
15-1212 Information Security Analysts	• Adversary Emulation Specialist (Red Team) • Cyber-defense Analyst (Blue Team) • Information Systems Security Manager • Vulnerability Assessment Analyst • Security Architect	2.55	4.66
15-1252 Software Developers	• Systems Developer	1.05	2.13
15-1211 Computer Systems Analysts	• Secure Software Assessor	1.57	1.76

11-3021 Computer and Information Systems Managers	• Systems Requirements Planner	1.30	1.55

The projected growth for **Information Security Analysts** nationally is expected to be **35% from 2022 to 2032**, significantly faster than the average for all occupations (U.S. Bureau of Labor Statistics, 2024). Given the concentration of cybersecurity positions in the Maryland region, this trend will likely be mirrored locally. Similarly, roles such as **Computer Systems Analysts**, **Software Developers**, and **IT Project Managers** are also expected to experience substantial growth due to the increasing complexity of cyber threats and the need for secure, user-friendly systems (U.S. Bureau of Labor Statistics, 2024a).

UCD training is vital for these professionals to design security measures that users can easily adopt and adhere to, which not only enhances security compliance but also reduces the likelihood of security breaches resulting from user errors (Petrescu, 2023)(Morris, 2024). In fields such as financial services, healthcare, and government, where secure and intuitive interfaces are critical, UCD expertise will provide a competitive edge for professionals and enhance overall system security (Haney, 2023)(Petrescu, 2023).

The importance of a *Master of Science in User-Centered Cybersecurity* stems from the growing recognition that traditional cybersecurity measures often overlook the human element, which plays a crucial role in the effectiveness of security systems. As highlighted in the data, cybersecurity tools are typically designed by technical professionals for other technical users, leading to complex systems that are difficult for the average user to navigate. This complexity results in frequent user errors, non-compliance with security protocols, and even intentional workarounds that compromise security (Hielscher et al., 2023)(Morris, 2024).

Research from NIST and other cybersecurity organizations emphasizes the need for systems designed with usability in mind. A lack of usability in cybersecurity systems leads to frustration, errors, and reduced adoption of necessary security measures (Haney, 2023). This gap between system complexity and user needs has been identified as a significant vulnerability, with 82% of breaches involving the human element, such as social engineering attacks and user errors (Petrescu, 2023). Moreover, the cybersecurity industry is beginning to realize that addressing human interaction with security systems through human-centered design is essential to reducing risks and ensuring that security measures are not just effective in theory but also in practice (Zurko & Simon, 1996).

Despite the growing awareness of these issues, many cybersecurity professionals still lack the training and tools necessary to implement user-centered design principles into their systems. As studies on security managers indicate, even when security friction—where security measures interfere with work—is recognized, professionals are often unable to resolve it due to a lack of usable security tools and a focus on compliance with

technical standards rather than human usability (Hielscher et al., 2023). This gap between usability and security has created an urgent need for cybersecurity professionals trained specifically in human-centered design.

The proposed master's program directly addresses these gaps by equipping professionals with the knowledge and skills to design and implement cybersecurity systems that are not only secure but also user-friendly. By focusing on both technical skills and an understanding of human behavior and interaction, graduates will be better prepared to create systems that users can easily adopt, reducing the risk of security breaches caused by human error (Haney, 2023)(Morris, 2024). As cybersecurity threats continue to evolve, there is a clear need for professionals who can bridge the gap between technical security measures and real-world user behavior, making this program a critical addition to the field.

D. Reasonableness of Program Duplication

D.1 Similar programs in the State and/or same geographical area.
While numerous graduate programs in the state offer degrees in cybersecurity, these programs typically focus on the technical aspects of the field, such as encryption, network defense, and threat analysis. However, as cyber threats become more sophisticated, the role of human behavior and system usability in maintaining security has become increasingly evident. Despite this growing awareness, no existing cybersecurity programs in Maryland explicitly integrate user-centered design principles—critical for addressing the usability challenges that lead to security vulnerabilities.

There are a number of degree programs in Maryland that use the word "Cybersecurity" in their title. While the idea of cybersecurity is popular within the state, the concept of User-centered Cybersecurity is novel. We have compiled a list of the graduate programs and courses that may focus on User-Centered Design in Table 1. To determine if a course focused on or mentioned user-centered design, we read each program's course description and looked for instances of "usability", "user-centered design", "human-centered design", or "human-centered interaction".

Table 1
Graduate degree programs in Maryland that have "Cybersecurity" in the title.

Institution	Degree Name	UCD Related Courses
Capitol Technology University	Master of Science in Cybersecurity	None
Hood College	Master of Science in Cybersecurity	None
Johns Hopkins University	Master of Science in Security Informatics	None
University of Maryland, Baltimore County	Master of Science in Cybersecurity	None

University of Maryland, Global Campus	Master of Science in Cybersecurity	None
University of Maryland, College Park	Master of Engineering in Cybersecurity	None

As user experience and human-centered design have gained prominence in various fields, several graduate programs in Maryland now offer degrees focused on enhancing usability and user interaction with technology. These programs, which emphasize user-centered design, human-computer interaction, and interaction design, prepare students to create intuitive, accessible, and effective digital experiences. However, in reviewing these curricula, it becomes evident that they often overlook the critical area of cybersecurity. In an era where security breaches can have severe consequences for both users and organizations, ensuring that digital systems are both user-friendly and secure is paramount. Despite their focus on the human element of technology, these programs rarely address the security implications of poor design, leaving a significant gap in their approach. The following analysis examines these user-centered design programs and highlights the absence of courses that integrate cybersecurity principles into their curricula.

We analyzed graduate programs that focus on Human-Computer Interaction, Human-Centered Design, or Interaction Design. Table 2 presents the programs in Maryland that have some proximity to user-centered design and the courses they offer in cybersecurity. To determine if a course focused on cybersecurity or contained some aspect of it, we read each program's course description and looked for instances of "cybersecurity", "security", or "threat".

Table 2
User-centered design-focused programs and cyberscurity courses they offer.

Institution	Degree Name	Cybersecurity Related Courses
University of Maryland, College Park	Master of Science in Human-Computer Interaction	None
MICA	Master of Professional Studies in User Experience Design	None
University of Maryland, Baltimore County	Master of Science in Human-Centered Computing	None
Loyola University of Maryland	Master of Arts in Emerging Media	ME 601.W01: Exploring Digital Culture

The analysis of graduate programs in Maryland reveals a significant gap in both cybersecurity and user-centered design education. Traditional cybersecurity programs focus heavily on technical skills but fail to address the critical role of usability and human-centered design in creating secure systems that people can actually use. On the other hand, programs centered on user experience and human-computer interaction emphasize designing for users but often neglect the essential security concerns that are increasingly central to digital interactions. The University of Baltimore's Master of Science in User-Centered Cybersecurity uniquely bridges this divide, offering a forward-thinking curriculum that combines the strengths of both disciplines. By equipping graduates with expertise in both cybersecurity and user-centered design, this program addresses a growing demand for professionals who can design secure, user-friendly systems. In doing so, it positions the University of Baltimore at the forefront of innovative cybersecurity education and fills an important void in the current academic landscape.

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

According to the current MHEC Program Inventory, none of the HBIs in the State currently offer graduate degrees in user-centered cybersecurity. Thus, we do not expect any impact on high- demand HBI programs.

F. Relevance to the Identity of Historically Black Institutions (HBIs)

We expect no effect on the uniqueness, institutional identities, and missions of HBIs since none of the HBIs in the State currently provide graduate programs that emphasize user-centered cybersecurity.

G. Adequacy of Curriculum Design, Program Modality, and Related Learning Outcomes

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

Faculty interviewed industry, government, and education leaders and discovered the lack of user-centered knowledge among existing security professionals. The program will be offered by the Yale Gordon College of Arts and Sciences, home of the MS in Interaction Design and Information Architecture and the BS in Applied Information Technology. Our College's experience in these subjects comes from offering both information technology, cybersecurity, and user-centered design programs to students in the region for over 20 years. It is from these programs that the faculty overseeing the program will be chosen.

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

There are five learning outcomes for this program. These learning outcomes focus on human-centered security design, research and evaluation, data-driven decision-making, ethical and accessible design, and security usability testing and iteration.

1. **Human-Centered Security Design**: Graduates will apply psychological, physiological, and cognitive principles of human behavior to design, develop, and evaluate secure, usable interfaces that align with user needs and security requirements.
2. **Research and Evaluation**: Graduates will design, conduct, and critically evaluate research studies—including diary studies, surveys, and usability tests—to gather data that informs security and usability improvements in cyber systems.
3. **Data-Driven Decision Making**: Graduates will prioritize and communicate user research findings based on their impact on users, strategic goals, and security implications, ensuring decisions are grounded in comprehensive data analysis.
4. **Ethical and Accessible Design**: Graduates will integrate ethical, legal, and accessibility considerations into the development of secure systems, ensuring inclusivity while adhering to privacy and security standards such as GDPR and CCPA.
5. **Security Usability Testing and Iteration**: Graduates will conduct user-centered testing and iteratively improve cybersecurity solutions by identifying usability pitfalls, leading questions, and human behavioral patterns that affect security.

Explain how the institution will:

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

Program goals have been mapped across all courses in the curriculum and assessments for each competency and goal occur within courses. Rubrics are developed by the department and used to assess artifacts collected by faculty bi-annually. Departmental assessment meetings discuss ways to improve student outcomes across the curriculum and improvements are not limited to the courses where the assessment occurs.

b) document student achievement of learning outcomes in the program

As described above, assessment is a faculty-driven cycle of continuous improvement. While assessment results document student achievement, they are also used to drive curriculum change.

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

The total number of credits for this program is 30. Students will take 12 credits of security-focused courses and 12 credits of usability-focused credits. Students will also take six credits of electives from a defined list.

Required Security Courses (12 credits):

Course Number	Title	Credits
AITC 670	Usable Security and Privacy	3
IDIA 672	Human Factors in Security Design	3
AITC 676	Documentation and Testing for Usable Security	3
AITC 674	Requirements Elicitation and UX	3

Required Usability Courses (12 credits):

Course Number	Title	Credits
IDIA 660	Usability and Accessibility in Cybersecurity	3
IDIA 662	Designing for Security	3
IDIA 640	Human Computers and Cognition	3
IDIA 642	Applied User Research for UX	3

Electives (6 credits):

Course Number	Title	Credits
IDIA 630	Information Architecture	3
IDIA 612	Interaction Design	3
IDIA 712	Advanced Interaction Design	3
IDIA 740	Topics in Computers and Cognition	3
IDIA 742	Topics in Advanced User Research	3

Course Descriptions

AITC 670 Usable Security and Privacy
This seminar explores the critical intersection of security, privacy, and usability. Students will gain a foundational understanding of key concepts, practical skills, and a deep appreciation for the human element in security. By analyzing real-world case studies, applying user-centered design principles, and evaluating ethical considerations, students will develop the expertise to design and implement effective, user-friendly security solutions.
Pre-requisite: IDIA 672 Human Factors in Security

AITC 674 Requirements Elicitation and UX
Bridges user experience design concepts with traditional software requirements elicitation processes and cybersecurity. Students learn about and implement best practices in requirements elicitation, maintaining the focus completely on the user experience rather than other functional and non-functional requirements that are traditionally at the core of the process of identifying software specifications.
Pre-requisite: IDIA 672 Human Factors in Security

AITC 676 Documentation and Testing for Usable Security
Focuses on the deliberate inclusion of concepts and practices related to user experience into software testing and documentation, which are processes that are closely tied to cybersecurity. Students will learn about testing and documentation tools and techniques, and the course content will focus on aspects related directly to usability and user experience. The material covered in this course takes the students from the initial steps of the process of testing as well as documentation, all the way to finished reports and documents. The instructor will utilize free and open-source software for practical examples throughout the course.
Pre-requisite: IDIA 672 Human Factors in Security

IDIA 612 Interaction Design
Explores electronic environments as fluid spaces where interactions among people, machines and media (words, images, sounds, video, animations, simulations) must be structured for the unforeseen. The course focuses on planning, analyzing, prototyping, and integrating interaction design with interface design. Lab fee required.
Prerequisite: PBDS 501 or passing score on HTML Proficiency Exam.

IDIA 630 Information Architecture
Students develop recommendations for site structure, navigation, labeling, metadata, and content strategy for a specific business model, audience, and context. Students base their recommendations on user research, requirements gathering, competitive analysis, and site analysis, including accessibility analysis. Lab fee required.
Prerequisite: PBDS 501 or passing score on a specified equivalent HTML proficiency exam.

IDIA 640 Humans Computers and Cognition
Introduces concepts, theories, and methods that support the study of human-computer interaction and user-centered system design. Students apply concepts from cognitive psychology and visual processing to explore human problem-solving, learning, knowledge representation, and problems of interface design. Prepares students to understand and analyze research based on empirical study of human behavior in its variety and complexity and on models of learning and understanding.

IDIA 642 Applied User Research for UX
Introduces the chief methods for studying users' interactions with software and information resources in ways that support design decisions. Encompasses both quantitative and qualitative methods, including methods such as surveys, focus groups, field studies, and traditional usability studies.

IDIA 660 Usability and Accessibility in Cybersecurity
Examines the critical challenges of usability and accessibility within cybersecurity. This course emphasizes user-centered design and iterative development to create secure, intuitive, and inclusive cybersecurity experiences. Students will engage in user testing methodologies to evaluate and enhance cybersecurity tools and practices, ensuring they are effective and accessible for diverse user populations.

Prerequisite: IDIA 640 Humans, Computers, and Cognition.

IDIA 662 Designing for Security
Bridges the gap between cybersecurity and user experience (UX) design, providing students with the skills to create secure systems that are also user-friendly. Through hands-on activities and theoretical study, students will learn how poor usability can compromise security and how human-centered design principles can enhance security features. Topics include designing intuitive authentication systems, addressing common usability pitfalls in security, and conducting usability testing to improve system effectiveness. This course is ideal for programmers and cybersecurity professionals looking to integrate UX principles into security solutions.

IDIA 672 Human Factors in Security
The human factor in cybersecurity threats is often overlooked, and solutions often focus upon forcing humans to adapt to the technological fix. This course examines the neurocognitive, psychological, and physical aspects of human cognition that impact the development and deployment of cybersecurity tools. It emphasizes the methodological approaches to designing security tools and interfaces that work alongside human cognition. Students will examine the levels of analysis at which humans interact with cybersecurity solutions from the internal through the organizational. The focus will be on how cybersecurity professionals and solutions can better leverage human abilities to improve cybersecurity.

IDIA 712 Advanced Interaction Design
Intensive exploration of topics in advanced interaction design of mutual interest to students and faculty. Content varies according to the concurrent interests of faculty and students. Course may be repeated for credit when the topic changes. Lab fee required. Prerequisite: PBDS 501 or passing score on the hypermedia proficiency exam.

IDIA 740 Topics in Computers and Cognition
Intensive exploration of topics in human/computer interaction and cognition of mutual interest to students and faculty. Content varies depending on the interests of faculty and students. Course may be repeated for credit when topic changes. Lab fee required. Prerequisite: IDIA 640 or permission of instructor.

IDIA 742 Topics in User Research
Intensive exploration of topics in user research of mutual interest to students and faculty. Content varies depending on the interests of faculty and students. Course may be repeated for credit when the topic changes. Lab Fee required.
Prerequisite: PBDS 501 or passing score on the hypermedia proficiency exam in addition to IDIA 642.

Discuss how general education requirements will be met, if applicable.
Not applicable to graduate degrees.

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

There are no accreditation or graduate certifications required for this program.

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

Not applicable.

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 resources, and costs and payment policies.

UBalt's website is a valuable resource that offers students a wealth of up-to-date information. This includes details about program curricula, course and degree requirements, expected technology competencies and skills for each degree, technical equipment prerequisites for courses, academic support services, available financial aid resources, comprehensive cost breakdowns, and payment policies. Additionally, students can access information about our state- of-the-art learning management system (LMS), Canvas, which serves as a vital platform for their educational journey.

Within Canvas, we provide a range of student tutorials to assist with LMS navigation, ensuring students can make the most of its features. Moreover, individual courses can offer resource materials through this platform, further enhancing the learning experience.

Our commitment to student success extends to ensuring accessibility. The University's Office of Disability and Access Services maintains a dedicated website and physical office with regular office hours. We also provide access to video and audio technologies to assist students who require accommodation.

The Division of Student Support and Access Services, along with the Bogomolny Library, offer a diverse array of academic and other support services. These encompass access to counseling resources, available 24/7, to address the various needs of our students and foster their overall well-being.

The program director will work with the website content manager to ensure that the MS in User-Centered Cybersecurity curriculum content pages are developed and posted. The catalog will be revised to reflect the new program requirements, and an updated Guide to Graduation for the MS in User-Centered Cybersecurity will be provided for the major. Information about course formats and technology assumptions, as well as any equipment requirements, will be available, as usual, to students in the course schedule. Each student will receive a syllabus that outlines student learning outcomes, course format, technology

needs, and campus resources. These resources include the Office of Disability and Access Services, the Academic Support Center (which has a Writing Center), and the Office of Technology Services.

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 program director will communicate with the Yale Gordon Collge of Arts and Sciences and university marketing departments to ensure that any marketing materials, such as program fact sheets, reflect the new curriculum. See above for information about the catalog and website. The catalog is updated annually and posted online, in addition to the routine program web page updates.

H. Adequacy of Articulation

The Program is within the scope of Accelerated BS-MS programs within the University of Baltimore, as articulated by the University System of Maryland's rules for Accelerated Programs. Under this Policy, an undergraduate student with a GPA of 3.5 or higher is allowed to take up to 9 graduate credits and double count them towards their graduate degree.

I. Adequacy of Faculty Resources

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

Faculty Member	Appointment Type	Field	Status	Terminal Degree	Academic Rank	Courses to be taught
Bridget Blodgett	Tenured	Online Communities / Programming	Full-time	PhD	Associate Professor	IDIA and AITC courses
Cory Newman	Contract	Interaction Design / Programming	Full-time	DSc (ABD)	Lecturer	AITC courses
Kathryn Summers	Tenured	Accessibility/Usability	Full-time	PhD	Professor	IDIA courses
Greg Walsh	Tenured	User-centered Design	Full-time	PhD	Associate Professor	IDIA courses
Giovanni Vincenti	Tenured	Applied Information Technology	Full-time	DSc	Associate Professor	AITC courses

Demonstrate how the institution will provide ongoing pedagogy training for faculty in evidence-based best practices, including training in:

a) Pedagogy that meets the needs of the students

The University of Baltimore provides periodic training to its faculty on the use of the latest online and face-to-face teaching tools through its Center for Excellence in Learning, Teaching and Technology (CELTT). It also offers professional development opportunities through attending national conferences and training, such as Coursera, EdX, etc. In addition, the faculty is afforded opportunities to attend continuing professional education sessions through other providers of technical skills training, such as Coursera and Udemy.

b) The learning management system (LMS)

The University of Baltimore provides periodic necessary trainings in its Learning Management System—Canvas—through its Center for Excellence in Learning, Teaching and Technology (CELTT) as well as periodic quality reviews of the faculty's utilization of LMS.

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

Similar to LMS training, The University of Baltimore's CELTT provides periodic training in online teaching to its faculty. Additionally, the faculty of the Yale Gordon College of Arts and Sciences coordinates informal, collegial discussions about course design and delivery. Student evaluation data is used to improve course design and effectiveness.

J. Adequacy of Library Resources

The program does not require substantial additional library resources beyond those already provided by the University of Baltimore's Bogomolny Library which provides an adequate level of access to academic books and journals. Bogomolny Library also provides access to a number of datasets that can be used in usability and cybersecurity projects.

K. Adequacy of Physical Facilities, Infrastructure and Instructional Equipment

The University of Baltimore's current facilities provide excellent conditions for user-centered cybersecurity work through our User Research Lab and through our current computer labs. The University also provides students with loaner laptops whenever they need them. Our classrooms are adequately equipped for both online and face-to-face instruction, and they have up-to-date IT infrastructure.

The University of Baltimore provides every student with an email address, access to our learning management system (Canvas), and free access to Office 365 software (Word, Excel and PowerPoint). All faculty and credit-earning students are provided with an institutional e-mail account that integrates with the institution's learning management

system, Canvas. Open-access, comprehensive student support for the learning management system is provided in module format and includes "how to" video and print tutorials, links to student services, and tips for success in an online learning environment. Faculty can access an LMS training site and work with Canvas faculty fellows from their colleges and instructional designers for course design and technical support. Both faculty and staff have access to 24/7 phone and chat support.

L. Adequacy of Financial Resources with Documentation

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. Do not leave any cells blank (use "0" if no data is applicable).

The Yale Gordon College of Arts and Sciences anticipates a modest student gain per year because of this program. We assume that this program will attract students who primarily plan to take two courses, or six credits, per semester, similar to the way the majority of students currently pursue the MS, Interaction Design and Information Architecture degree. Also, due to our Regional tuition and fee structure for students in Maryland, Washington, D.C., Delaware, and parts of Virginia and Pennsylvania, this tuition estimate uses in-state tuition for all estimates. Future tuition estimates are modeled on a 2% increase per year while fees, including projected course fees, are not increased in the model. Future enrollment estimates are based on an initial surge in the second year due to Spring enrollments and then 10% annual growth.

Table 1: Program Resources					
Resource Categories	**FY 2026**	**FY 2027**	**FY 2028**	**FY 2029**	**FY 2030**
1. Tuition and Fee Revenue (c + g below)	$155,508	$279,534	$296,588	$314,050	$331,920
a. Number of F/T students	2	4	4	4	4
b. Annual Tuition/Fee Rate	$17,924	$18,212	$18,518	$18,824	$19,130
c. Total F/T Revenue (a*b)	$35,848	$72,848	$74,072	$75,296	$76,520
d. Number of P/T students	10	17	18	19	20
e. Credit Hour Rate	$993 + $25	$1009+ $25	$1,026 + $25	$1,043 + $25	$1,060 + $25

f. Annual Credit Hours	12	12	12	12	12
g. Total P/T Revenue (d*e*f)	$119,660	$206,686	$222,516	$238,754	$255,400

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					
Resource Categories	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
1. Faculty (b + c below)	$17,754	$93,440	$144,193	$147,754	$151,316
a. Number of FTE	0	0.5	1	1	1
b. Total Salary	$16,450	$76,350	$113,150	$116,450	$119,750
c. Total Benefits	$1,304	$17,090	$31,043	$31,304	$31,566
2. Admin Staff (b + c below)	$0	$0	$0	$0	$0
a. Number of FTE	0	0	0	0	0
b. Total Salary	$0	$0	$0	$0	$0
c. Total Benefits	$0	$0	$0	$0	$0
3. Support Staff (b + c below)	$0	$0	$0	$0	$0
a. Number of FTE	0	0	0	0	0
b. Total Salary	$0	$0	$0	$0	$0
c. Total Benefits	$0	$0	$0	$0	$0
4. Technical Support and Equipment	$0	$20,390	$13,593	$14,160	$14,726
5. Library	$0	$0	$0	$0	$0
6. New or Renovated Space	$0	$0	$0	$0	$0
7. Other Expenses	$1,841	$3,257	$3,399	$3,540	$3,682
Total (Add 1 through 7)	$19,595	$117,087	$161,185	$165,454	$169,724

There is existing full-time faculty capacity to support the initial start-up of this new program. Since this program would share faculty and equipment resources with existing programs, the tables provide an incremental view of revenue and expenditures. Based upon the projected enrollment profile, the immediate resource expenses include salary for adjunct faculty, a program director summer stipend, and consumables paid for by charged course fees. Enrollment growth in the out-years will require additional full-time faculty and adjunct support. The Technical Support and Equipment and Other Expenses resource categories illustrate the planned equipment recapitalization and course consumables, respectively, that are funded with course fees.

M. Adequacy of Provisions for Evaluation of Program

The University has a shared governance process for curriculum approval. Both new courses and new programs are required to submit student learning outcomes (SLOs), which are then evaluated by faculty curriculum committees, plus staff in the deans' and provost's office.

The assessment of program student learning outcomes is faculty-driven. Assessment generally occurs within courses, but assessment results are shared and evaluated within the Yale Gordon College of Arts and Sciences.

Faculty are evaluated annually by their supervisor and dean. In addition, policies for tenure-track and tenured faculty call for in-depth peer review at regular intervals.

All courses undergo student evaluation using the college-wide software tool Explorance Evaluations. Students complete evaluations of their course and the instructor at the end of each semester, using an online form. Data from these evaluations are incorporated in the annual chair's evaluation of faculty and are used in faculty promotion and tenure decisions.

Student learning outcomes are assessed over a two-year cycle using direct and indirect measures. The primary assessment measures are direct assessments administered within courses, evaluated by faculty, reviewed by programs, and affirmed by the Yale Gordon College of Arts and Sciences as a whole.

Retention is a key metric of the quality of our courses and faculty and retention data is reviewed on an ongoing basis, as are student evaluations of faculty. These evaluations have highlighted improvements that can be implemented across the curriculum in course delivery and feedback.

As we implement the new curriculum, we have created a new assessment plan. Embedded assessments will be deployed beginning in Fall 2025 for the new program goals and the faculty will use this data to drive curriculum improvement.

N. Consistency with the State's Minority Student Achievement Goals

The University of Baltimore is an unusually diverse institution, with an average undergraduate age over 27, and a majority-minority undergraduate population. Approximately 47 percent of UB students are African American and 32 percent white.

The University serves nontraditional students, which includes many working adults. UBalt's current strategic plan underlines the importance of diversity, equity, and inclusion, and one of the strategic goals is specifically to strengthen UBalt's commitment to these core values.

O. Relationship to Low Productivity Programs Identified by the Commission

This program is not related to any low-productivity programs.

P. Adequacy of Distance Education Programs

The University of Baltimore has a long history of online education, offering the first fully online AACSB-accredited MBA program and having had the MS in Interaction Design and Information Architecture and PBC in User-Experience (UX) Design programs completely online for over ten years. As a University, we are versed in the technical, pedagogical, and social aspects of online learning.

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UNIVERSITY SYSTEM
of MARYLAND

BOARD OF REGENTS
SUMMARY OF ITEM FOR
ACTION, INFORMATION, OR
DISCUSSION

TOPIC: Report on Academic Program Actions Delegated to the Chancellor, AY 2023-2024

COMMITTEE: Education Policy and Student Life and Safety

DATE OF COMMITTEE MEETING: December 3, 2024

SUMMARY: In accordance with Board Resolution III-7.03, a report is submitted annually to the Board of Regents of program actions delegated to the Chancellor. Between September 2023 and August 14, 2024, the Chancellor approved 133 actions, including:

- suspension or discontinuation of 41 programs (including 8 degree programs, 14 certificates, and 19 areas of concentration within an existing degree);

- 20 title changes;

- 16 modality changes (adding or changing to online);

- 22 Classification of Instructional Programs (CIP) code changes;

- 23 new certificates (11 upper-division and 12 post-baccalaureate);

- 4 new areas of concentration and 5 other major modifications to existing degree programs; and

- 2 new offerings at USM Regional Higher Education Centers.

In addition, the Board of Regents approved 17 new degree programs (8 BS, 2 BA, 1 MA, 5 MS, 1 DVM) and one general education program was revamped. Closed sites are notifications rather than action requests so new closed sites are not listed in this report. A chart detailing the Chancellor's actions and programs approved by the Board for a total of 150 approvals for this report is attached.

ALTERNATIVE(S): This is an information item.

FISCAL IMPACT: This is an information item.

CHANCELLOR'S RECOMMENDATION: This is an information item.

COMMITTEE RECOMMENDATION: Information Only	DATE: December 3, 2024
BOARD ACTION: Information Only	DATE: December 20, 2024
SUBMITTED BY: Alison Wrynn 301-445-1992 awrynn@usmd.edu	1

Academic Program Actions AY 2023-24

Institution	Chancellor's Actions			Board Actions
	Discontinued or Suspended Concentrations and Programs	**New Certificates, Concentrations/Modified Programs and Degree Changes**	**Title Changes**	
Bowie State University (BSU)				B.S. in Virtual Reality and Gaming – new program (06-17-24)
Coppin State University (CSU)		M.Ed. Teacher Leadership change in program modality (8-30-23)		

AOC:	Area of Concentration	CAS:	Certificate of Advanced Studies	LDC:	Lower-Division Certificate
BA:	Bachelor of Arts	DNP:	Doctor of Nursing Practice	PBC:	Post-Baccalaureate Certificate
BFA:	Bachelor of Fine Arts	MA:	Master of Arts	PMC:	Post-Master's Certificate
BS:	Bachelor of Science	MFA:	Master of Fine Arts	UDC:	Upper-Division Certificate
BTS:	Bachelor of Technical Studies	MPS:	Master of Professional Studies		
BPS:	Bachelor of Professional Studies	MS:	Master of Science		

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Academic Program Actions AY 2023-24

Institution	Chancellor's Actions			Board Actions
	Discontinued or Suspended Concentrations and Programs	**New Certificates and Concentrations/Modified Programs and Degree Changes**	**Title Changes**	
Frostburg State University (FSU)	BS Economics – discontinue areas of concentration in -Business Economics (12/21/23) -Quantitative Economics (12/21/23) -Public Policy (12/20/23) BS Geography – discontinue area of concentration in Mapping and Geospatial Sciences (12/21/23) BS Elementary Education (Major) – suspension of education program. (3-28-24) BA Foreign Languages & Literature Major, Spanish Area of Concentration –discontinue (5-3-24) BS International Studies – suspend (5-20-24)	BS Political Science – substantial modification (6-27-24)	BS – Title Change Cybersecurity and Information Assurance – retitle from Secure Computing and Information Assurance (5-3-24)	

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BPS: Bachelor of Professional Studies	MS: Master of Science	

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Academic Program Actions AY 2023-24

Institution	Chancellor's Actions			Board Actions
	Discontinued or Suspended Concentrations and Programs	**New Certificates and Concentrations/Modified Programs and Degree Changes**	**Title Changes**	
Salisbury University (SU)		General Education – Approve new General Education Program (11-28-23) MEd Education Leadership – Add online modality (3-12-24) CIP Code Change for BA Economics and BS in Business Economics (7-15-24)		BA Music Therapy – new program (5/2/24) BS Engineering Physics – new program (4-19-24) MA Public Communication – new program (2/5/24)

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MFA: Master of Fine Arts
MPS   Master of Professional Studies
MS: Master of Science

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PMC: Post-Master's Certificate
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Academic Program Actions AY 2023-24

Institution	Chancellor's Actions			Board Actions
	Discontinued or Suspended Concentrations and Programs	**New Certificates and Concentrations/Modified Programs and Degree Changes**	**Title Changes**	
Towson University (TU)	Discontinue AOC BS Functional Biology of Animals (4-11-24) Suspend MFA Theatre Arts (8-18-24; MHEC approval date pending)	PBC Professional Spanish – move to online modality (10-9-23) MS Education – Secondary Education – add online modality (1-8-24) MEd Educational Leadership – change in program modality to online (3-12-24) UDC – Geospatial Technologies – new certificate program with existing degree (6-4-24) MS Accounting & Business Advisory Services with UB - CIP Code change (4-4-24) PBC Music Therapy (stand-alone); (8-18-24; MHEC approval pending as of 082324)	PBC Interactive Media retitled to PBC in Design in User Experience (UX) (10-9-23) MA Leadership in Jewish and Communal Service retitled to Jewish Studies, Education and Communal Leadership (3-12.-24) MEd in Special Education (AOC) title change to Teach as Leader in Autism Spectrum Disorder to the AOC as Teacher as Leader in Autism (5-20-24) Retitle PBC in Autism Spectrum Disorders in the Classroom to PBC in Autism in the Classroom (5-20-24)	BS Biophysics – new program (5-10-24) BS in Interdisciplinary Physics – new program (6-4-24)

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Academic Program Actions AY 2023-24

Institution	Chancellor's Actions			Board Actions
	Discontinued or Suspended Concentrations and Programs	**New Certificates and Concentrations/Modified Programs and Degree Changes**	**Title Changes**	
University of Baltimore (UBalt)	Suspend MS in Applied Psychology with AOCs in I/O Psychology and Counseling Psychology (6-18-24) Discontinue BA Jurisprudence (10-6-23) Suspend PBC Internal Audit – (4-29-24)	BS Cyber Forensics - add online modality (2-14-24) MS Cyber Forensics – add online modality (2-14-24) New PBC Essential Conflict Resolution within the existing MS in Negotiations and Conflict Management Program (2-13-24) New PBC Diversity, Equity and Inclusion- within the existing MPA - dual modality (2-22-24) New PBC in Global Engagement within the existing MA in Global Affairs and Human Security - dual modality. (4-1-24) New PBC Global Engagement within the existing MA in Global Affairs and Human Security - dual modality (4-1-24) New PBC in Nonprofit Leadership within existing MS in Non-profit Management and Social Entrepreneurship - on campus (3-25-24) MBA – offer existing program at the USM Hagerstown – new program (5-10-24) CIP code change MS Accounting & Business Advisory Services (joint with Towson U) (4-4-24)	Retitle MS Counseling to MS Counseling Psychology (6-6-24)	MS Artificial Intelligence in Business- new program (4-19-24)

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Academic Program Actions AY 2023-24

Institution	Chancellor's Actions			Board Actions
	Discontinued or Suspended Concentrations and Programs	**New Certificates and Concentrations/Modified Programs and Degree Changes**	**Title Changes**	
University of Maryland, Baltimore (UMB)	PBC Scientific and Medical Entrepreneurship – discontinue (11-28-23) PBC Global Health Innovation – discontinue (11-28-23) MS Social Entrepreneurship – discontinue (10-9-23) MS Global Health - Discontinue AOC Global Health Innovation (3-11-24) PBC Evidence-Based Practice in Nursing – discontinue (1-15-24) PBC Oncology Nursing – discontinue (12-21-23) PhD Nursing – AOC Direct Nursing – discontinue (1-4-2024) PhD Nursing – AOC Indirect Nursing – discontinue (1-4-2024) Discontinue AOC Social Strategy within the MSW (5-6-24)	PBC Intercultural Leadership modality change from hybrid to online (10-3-23) MS Diversity, Equity, and Inclusion Leadership modality change from hybrid to online (10-3-23) MS Nursing AoC Nursing and Inclusive Leadership - substantive modification of AOC (9-7-23) MS Nursing AoC in Health Services Leadership and Management – substantive modification of AOC (9-7-23) MS Global Health – new AOC in Social Entrepreneurship (4-17-24) MS Global Health – new AOC in Global Research Ethics (3-25-24) MS Global Health – new AOC Global Health Innovation (3-25-24) New PBC Palliative Care (within existing MS in Palliative Care) (1-3-24) New PBC Research in Palliative Care – within existing MS and PhD in Palliative Care (1-3-24) PhD Health Profession Education – Make online (limited residency) (12-11-24)	PBC Research Ethics title change to Global Research Ethics (3-11-23) MS Nursing – Nursing Administration AoC retitled to Nursing Leadership and Management (9-18-23) MS Health Sciences retitle AoC Research Ethics to AoC Global Research Ethics (3-11-24) Retitle MS Health Science AOC Research Implementation and Dissemination to AOC Implementation and Dissemination Science (2-8-24) MSW retitle AOC Social Administration to AOC Leadership, Policy, and Social Change (6-10-24)	

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Institution	Chancellor's Actions			Board Actions
	Discontinued or Suspended Concentrations and Programs	New Certificates and Concentrations/Modified Programs and Degree Changes	Title Changes	
University of Maryland, Baltimore (UMB)	MS Nursing – Discontinue the following concentrations: (11-28-23): AOC Clinical Research Management - AOC Gerontological AOC Maternal Child Health AOC Medical-Surgical AOC Nurse Anesthesia AOC Primary Care AOC Policy AOC Psychiatric Adult & Child AOC Teaching Suspend MS Medical and Research Technology (8-15-24 UMS; MHEC approval pending) Discontinue BS Medical and Research Technology (8-15-24 USM; MHEC approval pending)	MS Health Sciences – new AOC Social Entrepreneurship (online) (4-17-24)		

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Academic Program Actions AY 2023-24

Institution	Chancellor's Actions			Board Actions
	Discontinued or Suspended Concentrations and Programs	New Certificates and Concentrations/Modified Programs and Degree Changes	Title Changes	
University of Maryland Baltimore County (UMBC)	PBC Mechatronics (7-15-24) suspend PBC Mathematics Instructional Leadership (8-2-24) suspend PBC Elementary/Middle Science Education (8-2-24) suspend PBC Secondary Science Inquiry - suspend (8-2-24) PBC S.T.E.M. Education - suspend (8-2-24) UDC Project Management for Information Technology - suspend (6-27-24) Suspend PBC Secondary Physical Science Education (8-13-24) Suspend PBC STEM Educational Leadership (8-12-24) Discontinue PBC in Music Entrepreneurship (5-28-24)	MS Cybersecurity – additional location at Universities at Shady Grove (1-8-24) New PBC Healthcare Emergency Management (MHEC approval pending as of 08-23-24)	Retitle BA Gender and Women's Studies as Gender, Women's, and Sexuality Studies as (3-11-24) Retitle BFA Visual Arts AoC Photography to AoC Photography and Cinema (AOC) - (3/11/24) M.S. - Emergency and Disaster Health Systems retitled from Emergency Health Services (8-2-24)	

AOC: Area of Concentration	CAS: Certificate of Advanced Studies	LDC: Lower-Division Certificate
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BTS: Bachelor of Technical Studies	MPS: Master of Professional Studies	
BPS: Bachelor of Professional Studies	MS: Master of Science	

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Academic Program Actions AY 2023-24

Institution	Chancellor's Actions			Board Actions
	Discontinued or Suspended Concentrations and Programs	**New Certificates and Concentrations/Modified Programs and Degree Changes**	**Title Changes**	
University of Maryland College Park (UMD/UMCP)		PBC Professional Studies – Add new iteration – Risk Management and Mitigation (1-11-24) MS Criminology and Criminal Justice – Add online modality (12-11-23) MS Applied Economics – add online modality (3/19/24) BS Fire Protection Engineering – add online modality 2/26/24 CIP code change for Master in Community Planning (7-15-24) CIP code change for MS in Management (7-1-24)	BA African American Studies – change name to BA African American and Africana Studies (11-28-23) UDC African American Studies – change name to UDC African American and Africana Studies (11-28-23) Retitle BS Community Health to BS Public Health Practice (5-20-24)	BA and BS in International Relations – new programs (4-19-24) BS Global Health – new program (11-29-23) MS Applied Machine Learning – new program (1/9/24) MS Data Science – new program (1-16-24) MS Quantum Computing – new program (4/22/24) MS Bioinformatics and Computational Biology – new program (1/16/24)

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Academic Program Actions AY 2023-24

Institution	Chancellor's Actions			Board Actions
	Discontinued or Suspended Concentrations and Programs	**New Certificates and Concentrations/Modified Programs and Degree Changes**	**Title Changes**	
University of Maryland, Eastern Shore (UMES)		BS Sport Management (Online) - change modality to online (11-28-23) New UDC Aviation Maintenance – Powerplant (stand-alone; later to be stackable) (12-27-23) New PBC Global Humanitarian Disaster Assistance (stand-alone, online) (12-27-23) New UDC Aviation Maintenance Technology – Airframe (stand-alone) – (1-26-24) New PBC Career Technology (CTE) with existing (MEd) in CTE (5-14-24) UDC Work-Based Larning (WBL) and Career Counseling – new certificate (6-1-24) UDC – Career and Technology (5-10-24) New UDC Cloud Computing and Networking within existing BS in Cybersecurity Technology (2-13-24) Substantial Modification to Pharm D program (4-17-24) Add online modality for BS in General Studies (7-1-24)		BS Gaming and Software Engineering – new program (12/19/23) Doctor of Veterinary Medicine – new program (1/16/24) BS Aviation Maintenance Management – new Program (4-9-24)

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BPS: Bachelor of Professional Studies	MS: Master of Science	

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Institution	Chancellor's Actions			Board Actions
	Discontinued or Suspended Concentrations and Programs	**New Certificates and Concentrations/Modified Programs and Degree Changes**	**Title Changes**	
University of Maryland Global Campus (UMGC)	Suspend AOC in Nonprofit and Association Management (within the MS in Management (11/9/24)	Substantial Modification to BSN (3-25-24) Substantial Modification MBA (11-28-23) B.S. Management Information Systems CIP code change (6-14-24) New UDC Artificial Intelligence Foundations (4-14-24) New UDC Drones and Autonomous Systems (5-9-24) B.S. Cybersecurity Management and Policy - CIP code change (5-31-24) BS Cyber Operations – CIP code change (2-8-24) PBC Informatics - CIP code change (6-8-24) PBC Cybersecurity Management and Policy - CIP code change (5-31-24) PBC Cyber Operations - CIP code change (6-14-24) MS Data Analytics - CIP code change (5-31-24) MS Cybersecurity Management and Policy - CIP code change (5-31-24) MS - Digital Forensics and Cyber Investigation - CIP code change (6-12-24)	MS Management – AOC in Information Systems and Services – Title Change (to Information Systems) (1-26-24) BS Cyber Operations Online– retitle from Software Development and Security (2-8-24) Retitle BS Software Development and Security to BS Cyber Operations (2-8-24)	

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BTS: Bachelor of Technical Studies	MPS: Master of Professional Studies	

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Academic Program Actions AY 2023-24

BPS: Bachelor of Professional Studies   MS: Master of Science

Institution	Chancellor's Actions			Board Actions
	Discontinued or Suspended Concentrations and Programs	New Certificates and Concentrations/Modified Programs and Degree Changes	Title Changes	
University of Maryland Global Campus (continued)		MS Cyber Operations - CIP code change (7-1-24) New UDC Crime Scene Investigation within existing BS Criminal Justice (2-13-24) New UDC Cloud Computing and Networking within existing BS Cybersecurity Technology (2-13-24) UDC Digital Design – CIP code change (6-14-24) UDC Cyber Threat Hunting – CIP code change (6-14-24) UDC Web Design – CIP code change (7-1-24) UDC Management Information Systems – CIP code change (6-14-24) UDC Vulnerability Assessment – CIP code change (6-14-24) BS Computer Science – CIP code change (6-14-24) BS Management Information Systems – CIP code change (6-14-24) New UDC Fundamentals of Workplace Safety (12-27-23)		

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BS: Bachelor of Science	MFA: Master of Fine Arts	UDC: Upper-Division Certificate

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BTS: Bachelor of Technical Studies

BPS: Bachelor of Professional Studies

MPS: Master of Professional Studies

MS: Master of Science

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BOARD OF REGENTS

SUMMARY OF ITEM FOR ACTION,
INFORMATION OR DISCUSSION

TOPIC: Notification of Awards: Wilson H. Elkins Professorships, FY25 and USM Scholarships, AY 2024-2025

COMMITTEE: Committee on Education Policy and Student Life and Safety

DATE OF MEETING: December 3, 2024

SUMMARY: Annually, the University System of Maryland (USM) Office of Academic and Student Affairs facilitates the distribution of scholarships to students and research funds in support of its faculty. These include smaller scholarships and larger ones, such as the USM Regents Scholars Program. This program awards scholarships to exceptional students to pursue their education at one of the USM institutions. Full and partial scholarships are awarded to first year and transfer students to attend an undergraduate program on a full-time basis.

The Wilson H. Elkins Professorship is designated to supplement an existing faculty line and/or to support faculty research. Special effort is made to bestow the award in those areas where the Elkins Professor will have an opportunity to make an important contribution to the teaching, research, and public service mission of the institution and the entire University System of Maryland. The Professorship is an opportunity for the faculty member and institution to build on their strengths to be of greater service to its students and to society.

These awards are supported by endowed funds, which are managed by USM officials.

The Elkins Professorship summary reveals the names, institutions, and project descriptions of the FY25 awardees. The USM scholarships report includes information about the different scholarships.

ALTERNATIVE(S): This is an information item.

FISCAL IMPACT: This is an information item.

CHANCELLOR'S RECOMMENDATION: This is an information item.

COMMITTEE ACTION: DATE: December 3, 2024

BOARD ACTION: DATE:

SUBMITTED BY: Alison Wrynn, awrynn@usmd.edu; 301-445-1992

Wilson H. Elkins Professorship

The Elkins Professorship, which began in 1978 at the University of Maryland, College Park, was established to perpetuate the name and contributions of Wilson H. Elkins, a former Rhodes Scholar who led the University of Maryland to new levels of distinction as its president from 1954 to 1978. When the new University System of Maryland began in 1988, Dr. Elkins agreed that the professorship bearing his name should extend to the entire USM family. The Professorship may be used to recruit an outstanding individual to an institution to fill a vacancy or to provide special recognition and support to retain a current outstanding member of the faculty. An internal USM committee evaluates nominations and makes special effort to bestow the award in those areas where the Elkins Professor will have an opportunity to make an important contribution to the teaching, research, and public service mission of their institution and the entire University System of Maryland. Direct involvement with undergraduate and/or graduate students and outreach to other institutions within the System are hallmarks of the Elkins Professors. The Professorship is an opportunity for institutions to build on their strengths and to be of greater service to their students and to society.

FY24 Elkins Professorship Awardees Elkins Traditional Professorships

Award to Towson University to support the work of Dr. Mahnaz Moallem, Professor and Chair of the Department of Learning Technologies, Design, and School Library Media – Using funds to establish Girls Computing and Cybersecurity Clubs in the College of Education that will address persistent racial and gender disparities in computing, artificial intelligence, and cybersecurity. The clubs will serve as a research and professional development hub for faculty in teacher preparation programs. $66,578

Award to the University of Maryland, Baltimore to support the work of Professor Rabiat Akande, Francis King Carey School of Law - Using funds to explore the relationship between law and colonial power. This project will engage students and personnel within the communities being studied and will result in scholarship, a workshop series, podcasts, and conference presentations. $40,000 – Year 1 of 2

Award to the University of Maryland, College Park to support the work of Dr. Miao Yu, Professor and Director of the Sensors and Actuators Laboratory within the Department of Mechanical Engineering – Using funds to support a collaborative project (at the interface of engineering, computer science, biology, and aquaculture) investigating novel sensing and robotics tools for the study of marine ecosystem dynamics to promote sustainability. The collaboration includes the University of Maryland Center for Environmental Science and the University of Maryland Eastern Shore and the research team will include graduate, undergraduate, and high school students. $30,000 – Year 2 of 2

Elkins Academic Transformation Professorships

Award to Bowie State University to support the work of Dr. Rosemary Shumba, Chair and Professor of Computer Science - Using funds to conduct a feasibility study to establish an Experiential Learning Center (ELC) within the Department of Computer Science to enhance access, affordability, and quality for underrepresented students in computing fields. $30,000

Scholarship of Teaching and Learning Fellows

The 2024-25 Elkins SoTL Fellows are:

Debra McLaughlin, Program Director, Natural Sciences, University of Maryland Global Campus, with co-principal investigator Meenu Vikram, part-time faculty at University of Maryland Global Campus and full-time faculty at Notre Dame University of Maryland.
David Leasure, First-Term Experience, University of Maryland Global Campus

Haitham Alkhateeb, Professor, Mathematics, University of Baltimore

Carlos Faerron Guzmán, Associate Professor of Global Health, with co-principal investigator Amy Ramirez, Executive Director, Global Learning, University of Maryland, Baltimore

Nicole Hollywood, Professor, Business, Management and Accounting, with co-principal investigator Katherine Quinn, Associate Professor, Hospitality and Tourism Management, University of Maryland Eastern Shore

University System of Maryland Scholarship Programs
AY 2024 -2025

The University System of Maryland administers more than two dozen endowed scholarship funds that help in-state students from across the System afford an undergraduate education. Some are small, providing about less than $1,000 once to one student. Others are more significant, such as Regents Scholarships, which can provide a scholarship to cover tuition and fees, room and board, and a set stipend for educational expenses for one or two students. All the scholarships have been provided by the generosity of donors who want to assist students, often in memory of someone who was dedicated to education. While some scholarships look solely at academic merit, others have additional criteria relating to students' demonstration of financial need or another criterion such as academic discipline.

For the past year, staff have researched all the funds to ensure that the criteria for awarding are known and documented. Some small funds still require further research. A few funds that are restricted to be awarded to just one institution's students have been moved to that institution. A financial analysis was carried out to determine how much funding could be awarded from each fund so that its expenditures approximate that fund's annual interest. Staff also reviewed the process for awarding the larger scholarships and sought feedback from institutions. For first-year students, that process has involved seeking applicants from the schools and competitively reviewing the applicants. But those applications arrived after most aid had already been awarded. The funds could not be used to help attract students. Thus, the decision was made to find a way to rotate the awards so that each institution will receive at least one significant student award and one smaller student award per year. For first-year students, this process will begin for students now applying (allocations will be provided prior to the Board meeting). There are some scholarships for transfer students as well, including some full scholarships.

The largest scholarships—those that cover all or most of the cost of attendance for an in-state student—are the highly competitive Regents Scholarships. Because of the expense of these awards, the funds are not all awarded every year; the timing depends on the size of the endowment. Most awards require full-time attendance, but one of the transfer awards allows part-time attendance.

Projected Spending for the University System of Maryland Scholarships
AY 2024-2025

Type of Scholarship	New Awards	Continuing Awards	Average Award Amount	Aggregate Amount (estimated)	Notes
Regents – full	3 Transfer Students from MD community colleges	5 Students originally awarded as MDCC transfer students	$26,441	$211,530	Amounts have been calculated for the full Regents Scholarship numbers to include the remission of tuition & fees provided by the USM institutions.
	Pending first-year awards	7 Students originally awarded as first-year students	$35,717	$250,021	Amounts have been calculated for the Regents Scholarship numbers to include the remission of tuition & fees provided by the USM institutions.

Partial awards	4 Kelly Access Opportunity Grants (transfer)	3 Kelly Access Opportunity Grants (transfer)	$4000	$28,000	
	3 various (Kuhn et al.) N/A		$1,833	$5500	
	Fatzinger transfer (6)		$2,000	$12,000	One-time awards;
Wild Near-Completer Awards	Approx. 40	N/A	$11,000 per institution; per student amount usually about $3,000	$121,000	One-time awards made to students selected by the institution to drive completion
Total	56	15		**$628,051**	

![University System of Maryland logo]

BOARD OF REGENTS

SUMMARY OF ITEM FOR ACTION,
INFORMATION OR DISCUSSION

TOPIC: Universities at Shady Grove Update: Partnership Council and Super Studio

COMMITTEE: Committee on Education Policy and Student Life and Safety

DATE OF MEETING: December 3, 2024

SUMMARY: Dr. Anne Khademian, Executive Director of the Universities at Shady Grove, will be providing an update on the Partnership Council and super studio.

ALTERNATIVE(S): Information item.

FISCAL IMPACT: Information item.

CHANCELLOR'S RECOMMENDATION: Information item.

COMMITTEE ACTION: DATE: December 3, 2024

BOARD ACTION: DATE:

SUBMITTED BY: Alison Wrynn, awrynn@usmd.edu; 301-445-1992