UNIVERSITY of MARYLAND BALTIMORE

DR. ROGER J. WARD, JD, MSL, MPA
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September 15, 2022

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

Dear Secretary Fielder:

The University of Maryland, Baltimore is seeking authorization to offer a Doctor of Medical Science degree. The Doctor of Medical Science will be the first in the state of Maryland, innovative in its pedagogy and delivery, and will prepare experienced Physician Assistants to advance their practice and careers in administration, leadership, and clinical education. The proposed doctorate program will require the completion of 61 credits. Courses in the programs will be taught in predominately online formats with short on campus workshops to advance clinical skills. We plan on offering this program beginning with the Fall 2023 term.

The Doctor of Medical Science is designed for students and professionals with prior PA national certification and a minimum of 2 years work experience. The proposed program emphasizes concepts, practices and skills that PA professionals need to be effective in a wide range of medical settings to improve patient care, outcomes and equity.

The need for an expanded healthcare workforce is well studied. The PA profession has rapidly grown over the last 50 years, the expected growth of the profession exceeds 30% and only 2% of PAs are doctoral trained. Every year, approximately 30,000 applicants apply to PA schools across the country. Due to a paucity of PA faculty and clinical educators only one third of eligible candidates become new PA graduates and enter the medical profession. This program is designed to prepare the next generation of PA leaders and clinical educators. This is a part time solution to help candidates who are working professionals advance their education and careers.

Should you require additional information, please contact Dr. Courtney Resnick at cresnick@umaryland.edu or 410-706-1527.

Regards,

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

Office Use Only: PP#

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

Institution Submitting Proposal	University of Maryland, Baltimore

Each action below requires a separate proposal and cover sheet.

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

Payment Submitted: ( ) Yes ( ) No

Payment Type: (●) R*STARS # JE313449 ( ) Check # JE313449

Payment Amount: $850

Date Submitted: 9/2/2022

Department Proposing Program	Graduate School	
Degree Level and Degree Type	Doctoral Program	
Title of Proposed Program	Doctor of Medical Science (DMSc)	
Total Number of Credits	60	
Suggested Codes	HEGIS:	CIP:
Program Modality	( ) On-campus (●) Hybrid ( ) Distance Education (*fully online*)	
Program Resources	(●) Using Existing Resources ( ) Requiring New Resources	
Projected Implementation Date	(●) Fall ( ) Spring ( ) Summer	Year: 2023
Provide Link to Most Recent Academic Catalog	URL: https://www.graduate.umaryland.edu/policies/	
Preferred Contact for this Proposal	Name: Dr. Courtney Resnick	
	Title: Director, Academic Administration	
	Phone: (410) 706-1527	
	Email: cresnick@umaryland.edu	
President/Chief Executive	Type Name: Dr. Roger Ward	
	Signature: 	Date: 09/15/2022
	Date of Approval/Endorsement by Governing Board:	

Revised 1/2021

A PROPOSAL FOR A NEW ACADEMIC PROGRAM at THE UNIVERSITY OF MARYLAND, BALTIMORE FOR DOCTOR of MEDICAL SCIENCE

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) Graduate School submits this proposal to create a Doctor of Medical Science (DMSc) program for Physician Assistants (PAs). UMB intends to offer the program as a mixture of didactic coursework and applied practical training and research, allowing partial fulfillment of credits for applicants possessing a Master of Health Science or similar Physician Assistant (PA) degree including foundational ethics, research, and health systems science course work. Most of the DMSc didactic content and courses will be accessible online, and the practical courses will include clinical and simulation instruction and assessment. The proposed degree will allow PAs to advance their education in preparation for advanced practice with a focus on intercultural healthcare leadership, quality improvement, clinical education, and promotion of health equity. The program will focus on clinical excellence, leadership, applied research, process, and quality improvement. Students will apply these principles to the practice of medicine to enhance health outcomes, improve patient care, and strengthen the clinician-patient relationship.

In shifting to required graduate-level education, the PA profession in 2020 joined a lengthy list of health professions that have transitioned or are transitioning to a higher degree requirement for professional practice. In fact, pharmacists, physical therapists, and nurse practitioners (NPs) are among those that have now moved beyond the master's degree to a clinical doctorate. In PA education, the master's degree will remain the required credential for the near future, although doctoral level education has emerged to allow a select group of PA practitioners to advance their clinical and education leadership skills and earn qualifications to advance their careers. The designation for this proposed DMSc degree is chosen in accordance with the developing precedence in PA doctoral education. There are now fifteen DMSc programs at several types of institutions across the United States.

The DMSc plan of study is designed to build a depth of knowledge and skill in advanced practice of medicine, giving PAs the flexibility to both enhance their knowledge holistically as well as the ability to focus within a specialty. The curriculum will use clinical and practical courses taught at UMB. The hands-on practicums will be conducted and supervised by UMB faculty with advanced training and focus on relevant clinical projects and improving health outcomes at the state, regional level within and beyond Maryland Health Systems.

Graduates will be prepared to provide intercultural leadership and clinical education, contribute meaningfully to strategic development, implementation, management, evaluation, and foster continuous improvement of clinical teams, practice, and systems. They will find employment as advance practice provider directors, clinical practice team leaders, managers and clinic owners, researchers, educators, and healthcare leaders, all of which are in high demand. According to the Bureau of Labor and Statistics PA

employment and growth is projected to increase 31% over the next 8 years. In addition, graduates will be prepared and eligible for certification of advanced qualification (CAQ) from the National Commission on Certification of Physician Assistants (NCCPA). Current CAQ qualifications can be found at Specialty Certificates - NCCPA.

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. In context to PA education, UMB partnered with Anne Arundel Community College in 2014 to augment PA certification education with master's degree-level coursework. In 2022 the program was renamed and is now solely offered by UMB. The DMSc program continues UMB's commitment to the PA profession by recognizing the need for advanced education and training opportunities for Physician Assistant professionals. Currently 2% of certified PAs hold doctoral degrees, and the DMSc degree is emerging as a recognized post-graduate degree for advanced practice PAs. Although there are currently 15 DMS/DMSc programs in the country, Maryland PAs currently need to enroll in out-of-state programs to gain additional PA-focused post-graduate degrees. UMB intends to pursue this path to support PA graduates and prepare state and regional PA leaders in healthcare and clinical education. The knowledge and skills provided in the DMSc are crucial to future success in patient care, PA education, research, and health equity, as well as in health system leadership.

The *Elsevier Health Clinician of the Future* study published in March of 2022 stated that one in three clinicians are considering leaving their current jobs and half of those are considering leaving healthcare altogether by 2024. The toll of COVID, health inequity, and the shifting dynamics of healthcare delivery require new skills and education to bolster and build a 21st century healthcare workforce. Survey respondents noted the needs for enhanced technology literacy, representation in leadership, and workforce expansion. Further, research conducted at UMB by faculty at the Physician Assistant Leadership and Learning Academy show that interest in doctoral level education for PAs is growing.

The DMSc program directly aligns with the first theme of UMB's strategic plan, "Health, Justice, and Social Impact," in order to "deepen and expand local and global engagement by providing health, legal, and social work programs and engaging in research to promote social justice and improve health." Our proposed program leverages institutional expertise to tackle systemic problems in healthcare education and delivery to enhance health outcomes, improve patient care, and strengthen the clinician-patient relationship. This program will educate PA professionals to be more knowledgeable, skilled, technologically literate, and prepared to engage in leadership, research, clinical education, and clinical process improvement in the practice of medicine. The proposed program also supports UMB's second theme, "Research and Scholarship," by harnessing our interdisciplinary strengths across UMB and the Health System in Clinical Medicine, respectively, to improve care quality, clinical outcomes, and health equity through ongoing continuous improvement, applied research, and scholarly dissemination. Related

to this, the proposed program also supports UMB Graduate School's strategic goal, to achieve national prominence in Physician Assistant education and practice.

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 be well-resourced and will rely on existing principal faculty and incorporate adjunct faculty with clinical practice and leadership experience within the state and at UMB. Some of the course content has already been developed. Content that already exists will be updated with team-based learning and case-based learning best practices for online learning in collaboration with UMB's Faculty Center for Teaching and Learning. New courses to be developed will be shared across the scope of doctoral training expansion at UMB. Because of this, the UMB Graduate School will have the capacity to offer the proposed degree program leveraging existing resources and ensure continued funding to support the program in the future.

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 Graduate School has an ongoing commitment to sustaining new degree programs it has developed. The Graduate School has committed significant resources in the realm of administrative support including a vice provost, vice dean, assistant dean, and program director who will provide leadership for the quality and sustainability of the Doctor of Medical Science. Additionally, faculty and leadership within the Physician Assistant Leadership and Learning Academy at UMB along with the Graduate School faculty will provide additional support.

   Programs such as this are expected to attract students from diverse clinical backgrounds originating both locally and regionally. UMB has 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 graduate school completion.

   The program curriculum will address diversity, bias, equity, social need, health equity, and social determinants of health. Disparity in health outcomes is an important challenge in the delivery of healthcare, and as such, it carries over into clinical practice and decision making. A focus on improving technology literacy and use to prevent unintended bias, which can lead to discriminatory or exclusionary practices, will prepare our graduates to prevent health inequity. Bias, equity, and social determinants of health are included in the curriculum objectives. In addition, with a focus on leadership, we intend to extend opportunities for the inclusion of intercultural leadership throughout the curriculum.

   Further, the curriculum focuses on the new and innovative area of doctoral study in PA practice utilizing structured inquiry, and problem and case-based immersion experiences that provide hands-on experiences addressing real-world challenges. For those who

qualify, instruction can also prepare individuals for NCCPA certification of advanced qualifications (CAQs.)

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

Nationally, 2% of the 158,430 certified PAs indicate their highest degree is a doctorate and Maryland PAs follow this trend. PAs are the only profession allowed to prescribe medications with a master's as a terminal degree and increasingly faculty postings are showing preference to or requiring a doctoral degree. Based on the Physician Assistant Education Association faculty and director survey report of 2020, 23.5% of faculty hold doctoral degrees and 45.5% of program directors hold non-clinical doctoral degrees. Employers are increasingly seeking doctoral-trained PAs to fill clinical and academic positions as well as certification of advanced qualifications (CAQ) based on specialty. According to the NCCPA state survey published in 2021, 108 of 3,5000 PAs in Maryland have earned advanced qualifications and 84 of those with CAQ designation are in Emergency Medicine.

The Association of American Medical Colleges predicts a significant physician shortage, as high as 139,000 by 2033. This report published in 2020 pre-COVID identifies the aging demographic of the US, anticipated retirements, and the maldistribution of providers, most heavily concentrated in urban areas as potential causes for the anticipated shortfall and gap needed to meet the healthcare demands of an aging and chronically ill population. The anticipated increase in complexity of care and the trend toward care delivery out of the hospital requires additional advanced practice clinical providers prepared to work collaboratively, and demonstrate leadership at the team, department, and organizational level. The recent Supreme Court decision removing reproductive protections and limiting access to reproductive healthcare will also exacerbate a recognized shortage of providers willing or able to provide access to women's health and clinical education. The DMSc aims to produce practitioner scholars prepared to contribute to expanding the PA workforce and utilization.

The Maryland State Plan for Post-Secondary Education for 2022 identified three aims - 1) student access, 2) student success, and 3) innovation along with and multiple goals and strategies grounded in equity framework and lens. In response, the DMSc has been thoughtfully designed to optimize access for both traditional and non-traditional Maryland learners through online courses as well as impact labs designed to be delivered in person. To assure thoughtful consideration for diversity, inclusion, and equity we are purposefully including elements of trauma informed pedagogy and teaching. To apply the neuroscience of learning and best practice in adult learning theory to improve retention and success, we will be using a team based and case based experiential learning model. Each week our students will be able to learn, practice, and apply knowledge and skills while practicing clinically. This design improves knowledge and skill retention, fosters competency and benefits the citizens of Maryland improving access to competent, compassionate, and equitable care.

The program was designed to be part-time to support the needs of practicing clinicians and learners will be provided up to six years to complete the degree provides student-centric flexibility to reduce attrition and improve completion rates, a consistent problem with doctoral education. To foster student success, UMB has comprehensive student services on campus and

the program will incorporate both an appreciative advising model as well as coaching to foster student success. Last, to improve access we are looking at innovative partnerships to offset costs of education through engagement in clinical education and precepting. This is designed to assist all students, enhance diversity in the PA profession, and benefit Maryland programs across the state including rural, urban, and historically black institutions. Program directors across the state have been involved and given the opportunity to contribute meaningfully to the design of the curriculum including outreach to map paths for their future graduates to matriculate.

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

Workforce trends indicate that one of the greatest areas of job growth for the foreseeable future will continue to be in the healthcare professions. The US Bureau of Labor and Statistics projects healthcare professions to increase by 16% from 2020 to 2030, much faster than the average of all occupations. The Physician Assistant profession exceeds projections for the healthcare professions at large, predicting a growth rate of more than 31% in employment opportunities over the next 10 years (https://www.bls.gov/). A search on indeed.com identified 21,286 positions available for Physician Assistants across multiple disciplines. Consistently rated as one of the top careers by US News and World Report, PAs generalist training prepares them to work collaboratively with healthcare team members and physicians to care for patients across settings.

Healthcare professions are a leading choice among high school seniors as well as graduating undergraduate students. However, a lack of healthcare educators and clinical sites remain a barrier to workforce development. Although PAs are needed as clinicians to see patients, they are also needed to teach the next generation of provides as preceptors for the growing number of programs. With 297 accredited PA programs nationally currently, and an estimated 34 more by 2024, a lack of clinical sites is consistently a barrier to program class size expansion. The mean PA class size is 47 nationally according to the Physician Assistant Education Association by the numbers report last published in 2020. Class and program size is largely dependent upon availability of fulltime and instructional faculty (preceptors) who must be Board certified Physicians or NCCPA certified PAs to precept and have the education and experience within their specialty discipline to teach. According to the Physician Assistant Education Association Central Application Service for Physician Assistants trend report, each year thousands of students apply through the Central Application Service for Physician Assistants and due to a lack of faculty and clinical sites from 2017-2021, one third are turned away. Each year over 10,000 new graduates enter the profession, with a current total of 158,470 certified PAs in practice according to the NCCPA 2021 Statistical report. Of those 158,470 PAs 7.8% of those surveyed are planning to leave their current clinical position with 6.7% seeking to pursue additional education.

Closer to home, at UMB we regularly receive inquiries from PA alumni about advanced practice education and further education to contribute to their clinical training. When surveyed, over 50% of the most recent graduating PA class at UMB (N=40) were interested in pursuing doctoral study.

Physician Assistants play a critical role on a health professions team and are recognized as integral to the success of our national health agenda. National policy is expanding and improving the practice, integration, and reimbursement of PA services. During the recent pandemic as the result of advocacy at the state and national level, PA scope of practice expanded in multiple states to improve access to care. The DMSc program intends to build upon foundational competency to develop leaders prepared to improve PA integration and utilization, foster ongoing process improvement, and provide leadership optimizing implementation of PAs into new and developing clinical total care models. Inclusion of Physician Assistants in health expansion efforts of the workforce and development of leadership at local, regional, and national levels are priorities for our national healthcare system. The DMSc will help meet a national need to equip PAs with the clinical and professional doctoral training not only for advanced practice but also for educating future health professionals.

Employment opportunities

The DMSc aims to prepare master's prepared graduates from accredited US PA programs to serve as preceptors, team leaders, and administrators in inpatient, outpatient, community, and educational settings. This program builds upon work currently being done at UMB with the Health Professions Education PhD and the Physician Assistant Leadership and Learning Academy, a state-wide fellowship for PAs.

According to the 2022 salary report published by the American Academy of Physician Associates, one in three PAs were in a formal or informal leadership role. The majority of those in leadership roles were for positions such as PAs or lead advanced practice providers, followed by directors, managers, and chiefs. Of those in formal leadership roles, only 4.5% of PAs indicated they served at the executive level or vice-president level within their organizations. It is critical for shared governance and advancement of the profession that we improve the capacity for leadership within the profession. One in five PAs in administration reported they received formal leadership training. The profession sees the need for leadership training, and it is articulated in both the strategic plans for the American Academy of Physician Associates and the Physician Assistant Education Association. However formal training regarding leadership is limited in traditional masters PA programs.

D. Reasonableness of Program Duplication

No Doctor of Medical Science Degree programs exist in Maryland or Washington D.C. and the closest program is in Lynchburg, Virginia. Despite four accredited PA programs in Maryland, no other institution in the state is preparing PA graduates at the doctoral level. UMB currently provides an interprofessional pathway to the PhD for PAs with a focus on Health Professions Education (HPE). The emphasis of the HPE PhD is on theoretical application of education theory and preparing independent researchers, which differs from the DMSc due to the focus on advanced clinical practice skills, clinical leadership and clinical education using applied research methods to improve practice and quality care.

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.

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

The proposed program does not have relevance to the identity of HBIs in Maryland. The University of Maryland Eastern Shore has a Physician Assistant Program, and graduates of this program will have the opportunity to further their education at UMB.

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 DMSC program was proposed following a Physician Assistant Summit held at UMB and aligned with the UMB Graduate School strategic plan goals and objectives. UMB PA faculty leadership under the direction of Dr. Cheri Hendrix and informed by the research of the Physician Assistant Leadership and Learning Academy led by Dr. Gerald Kayingo proposed the program and advocated for establishing the program at UMB. Following a national search, Dr. Mary Jo Bondy was selected to lead the program. A series of meetings were held by Dr. Bondy, including outreach to all four accredited PA programs in the state, developing PA program leaders, representatives from the Maryland Academy of Physician Assistants, faculty and alumni of the UMB MS Health Science program, and other Graduate School faculty. The group recognized the compelling need for advanced applied doctoral education and training for PAs that was focused on the clinical practice of medicine, clinical instruction, and improved clinical outcomes. To date those seeking applied doctoral education have been forced to seek out-of-state solutions. On campus meetings with the Director of PhD of Health Professions Education, the Director of the Master of Science in Health Science, the Director of Intercultural Leadership, and the Director of Doctor of Nursing Practice were also conducted to review and discuss the curriculum and opportunities for collaboration.

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 Doctor of Medical Science, students will develop core competencies in seven key areas that represent the competencies of the PA profession, 1) knowledge for practice, 2) interpersonal communication skills, 3) person-centered care, 4) interprofessional collaboration, 5) professionalism and ethics, 6) practice-based learning quality improvement, and 7) society and population health. These competencies represent the

most recent PA professional competencies endorsed by all four national PA organizations in 2021 and represent advanced practice skills beyond the new graduate PA competencies.

The proposed DMSc program learning outcomes are:

- Demonstrate knowledge about established and evolving biomedical and clinical sciences and the application of this knowledge to patient care.
- Demonstrate interpersonal, verbal, and written communication skills that result in the effective exchange of information, advancing learning, and healthcare in collaboration with patients, families, and health professional team members.
- Demonstrate leadership ability to engage with a variety of other health care professionals in a manner to optimize safe, effective, patient- and population-centered care.
- Engage in reflection and critical analysis of one's own practice experience, the medical literature, and other information resources for the purposes of self-evaluation, lifelong learning, practice improvement, and organizational health.
- Demonstrate a commitment to practicing medicine ethically and in legally appropriate ways and emphasizing professional maturity and accountability for delivering safe, quality, affordable health care to patients and populations.
- Provide person-centered care that includes patient- and setting-specific assessment, evaluation, and management and healthcare that is evidence-based, supports patient safety, and advances health equity.
- Recognize and understand the influences of the ecosystem of person, family, population, environment, and policy on the health of patients and integrate the knowledge of these determinants of health into patient care decisions.
- Utilize principles of intercultural leadership, health system science, implementation and dissemination science when dealing with complex problems to promote the strategic use of resources to improve care and operational effectiveness.

To support the DMSc program learning outcomes, UMB will utilize two pedagogical approaches to educating doctoral students: 1) Clinical coursework in which PAs with experience in medical specialties work together in inpatient and outpatient settings; and 2) online coursework designed to enhance accessibility to learning for practicing physician assistants. Each pedagogical approach has broad learning objectives described in the table below.

Clinical Objectives	**Online Objectives**
1. Demonstrate investigative and critical thinking in clinical situations. 2. Access and interpret current, credible, and unbiased sources of medical information to inform decision making to limit bias and improve health equity. 3. Interpret clinical data and utilize artificial intelligence and data	1. Adhere to standards of care, and to relevant laws, policies, and regulations that govern the delivery of care in the United States. 2. Utilize technological advancements that decrease costs, improve quality, and increase access to care and improve health outcomes and address population health needs.

informatics to improve care delivery and prevent health inequity. 4. Work effectively and efficiently in various healthcare delivery settings and systems relevant to the PA's clinical specialty. 5. Identify improvement goals and perform learning activities that address gaps in knowledge, skills, and attitudes. 6. Demonstrate emotional resilience, stability, adaptability, flexibility, and tolerance of ambiguity. 7. Understand emotions, behaviors, and responses of others, allowing for effective interpersonal communication and leadership effectiveness. 8. Recognize situational barriers to effective communication and provide patient-centered solutions. 9. Work effectively with other health professionals to provide collaborative, patient-centered care while maintaining a climate of mutual respect, dignity, diversity, ethical integrity, and trust. 10. Build rapport with colleagues and other professionals to establish and enhance interprofessional teams and organizational effectiveness. 11. Implement adaptive leadership practices and principles. 12. Demonstrate understanding of evidence based pedagogical principles to guide clinical education efforts. 13. Integrate knowledge of evidence-based education strategies into practice.	3. Understand macroeconomics and finance of healthcare delivery and ecosystem. 4. Consider ethics when leading, advocating, and allocating resources for an individual patient or population-based care. 5. Engage the abilities of available health professionals and associated resources to complement the PA's professional expertise and develop optimal strategies to enhance patient care. 6. Demonstrate knowledge of personal bias, remain curious, flexible, and exhibit professional civility when adapting to change. 7. Demonstrate commitment to lifelong learning and education of students and other healthcare professionals. 8. Exhibit self-awareness to identify strengths, address deficiencies, and recognize limits in knowledge and expertise. 9. Identify, investigate, analyze, and inform new knowledge, guidelines, standards, technologies, products, processes, or services that have been demonstrated to improve outcomes. 10. Identify improvement goals and perform learning activities that address gaps in knowledge, skills, and attitudes. Mentor others in this work through clinical education and precepting. 11. Use practice performance data and metrics to identify areas for improvement. 12. Develop professional and organizational capacity for ongoing quality improvement. 13. Improve the health of patient populations. 14. Demonstrate accountability, responsibility, and leadership for removing barriers to health.

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 understanding of learning outcomes in their courses using a variety of assessments including meaningful and substantive contributions to online course discussions, satisfactory completion of assignments and reflections, scores on quizzes and examinations, scores on team collaboration, scores on written essays and term papers, and evaluation of research and capstone project.

Students will also evaluate courses and faculty through a standard evaluation of every course. Formal assessment planning is already in place throughout UMB Schools including the Graduate School. 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. Additional evaluation includes tracking of student retention, grade distributions, and cost-effectiveness, and regular academic program reviews consider these factors.

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

The proposed DMSc degree is comprised of 60 credits. There are six existing courses (15 credits) in the Graduate School's Master of Science in Health Science (MSHS) program that are a required part of the DMSc and will have already been completed by PAs graduating from UMB. Consequently, UMB graduates may apply these courses to demonstrate partial fulfillment towards the degree thus acceleration time to degree. There will be two clinical impact labs integrated into clinical courses. The combined curriculum of 15 credits of MS Health Science, 5 credits of electives, 24 credits of DMSc didactic, and 16 credits Clinical and Impact Labs and Capstone build to 60 credits. The time to degree will take on average three years of part-time study and should not exceed six years.

In the near future, UMB intends to submit an additional proposal so that students will be able to earn a PBC in Applied Practice Provider Leadership by successfully completing the following four courses of the degree: DMSC 701, 712, 714 and 715.

	MSHS*	CORE	CLINICAL
MHS 600 Intro to Library Resources and Scholarly Writing (1 credit)	X		
MHS 602 Legal and Ethical Issues for Health, Human Services and Clinical Professionals (2 credits)	X		
MHS 615 Biostatistics for the Health Professional (3 credits)	X		

MHS 630 Essentials of Chronic and Infectious Disease Epidemiology (3 credits)	X		
MHS 652 Communication and Leadership (3 credits)	X		
MHS 608 Research Seminar I (3 credits)	X		
Electives (5 credits)			
DMSC 701 Healthcare System, Organizational Macro Economics and Finance (3 credits)		X	
DMSC 712 Healthcare and Education Legal Principals and Policy (3 credits)		X	
DMSC 713 Impact Institute - Clinical Practice Improvement Symposium 1 (2 credits + 4 credits)			X
DMSC 714 Applied Leadership and Advocacy (3 credits)		X	
DMSC 715 Technology Literacy, Utilization, and Integration of Clinical Informatics into Practice (3 credits)		X	
DMSC 716 Clinical Learning and Practice Reflection (3 credits)		X	
DMSC 717 Evaluation, Synthesis and Critical Appraisal of the Literature (3 credits)		X	
DMSC 718 Impact Institute-Clinical Practice Improvement Symposium 2 (2 credits + 4 credits)			X
DMSC 719 Scholarship: Writing, Publishing and Presenting (3 credits)		X	
DMSC 720 Improving Quality, Equity, and Outcomes (3 credits)		X	
DMSC 821 Capstone (4 credits)		X	
DMSC 822 Special Topics (1 - 6 credits)			

*Existing courses

MS HEALTH SCIENCE COURSES (existing courses in the MSHS/PA curriculum)

- **MHS 600: Introduction to Library Resources and Scholarly Writing (1 credit)**
  This course is designed to provide graduate learners the opportunity to develop skills in both accessing relevant online library resources and engage in scholarly writing. The portion of the course focusing on library resources teach and strengthen lifelong research and information competency skills by introducing student to the nature of research and the role of library in the research process. Students learn the core concepts of information retrieval and essential techniques for finding, evaluating, analyzing, organizing, and presenting information. The topics covered include using online catalogs to locate books and other library resources; developing research strategies; exercising critical thinking to evaluate information; applying critical and search techniques to electronic databases; understanding citation formats and using the internet as a research tool. The scholarly writing of the course will place emphasis on organization, effective conveyance of thoughts through written words, and writing for multiple types of audiences. Students will have the opportunity to improve both their academic writing and their research skills as they write a literature review or a proposal. Emphasis is placed on conventions of

scholarly writing and organizational strategies as well as grammar, editing, and usage.

- **MHS 602: Legal and Ethical Issues for Health, Human Services, and Clinical Professionals (2 credits)**
  This 8-week, 2-credit online course will explore ethical and legal issues that are timely and germane to health professionals. This course is based on the premise that to act in an ethical manner means to engage in conduct according to accepted principles, and to improve moral confidence and moral action we must prepare the next generation of health professionals with the ethical resources, tools, and skills. A case-based learning design will be utilized to engage students in ethical discussion, exploration, analysis with the goal of determining ethical and legal action that is sound and logical. This course will prepare students to make ethical health care decisions in the future.

- **MHS 615: Biostatistics for the Health Professional (3 credits)**
  We live in a time exploding with data. Everything from individual wearable technology to community and national profiles, yet few students are prepared with the quantitative skills to analyze and evaluate that data and draw conclusions. This course will present basic statistical methods to a broad range of medical or public health problems. The course will emphasize the use of these methods and the interpretation of results using bio-medical and health sciences applications, healing clinicians move beyond the data to decisions.

- **MHS 630: Essentials of Chronic and Infectious Disease Epidemiology (3 credits)**

  In the past 15 years, we have seen a rise in chronic disease impacted by behavior and policy, infectious disease outbreaks and new mechanisms of spread never seen before in the US. Clinicians must consider the biosocial impact of globalization and environmental change upon health and disease. In this course we present fundamental concepts of epidemiology to assist the new clinician in their efforts to critically evaluate the health and medical literature, participate in monitoring and surveillance of disease, and interpret data in their individual practice, community, and nation to improve care in their practice and professional sphere.

- **MHS 652: Communications and Leadership (3 credits)**
  Students learn effective management and communication skills through case study-analysis, reading, class discussion and case-based learning. The course covers topics such as effective listening, setting expectations, delegation, coaching, performance, evaluations, conflict management, negotiation with senior management and managing with integrity.

- **MHS 608: Research Seminar 1 (3 credits)**
  This is a 3-credit seminar course designed to give students the basic information regarding health sciences research discoveries. It also provides students with the tools to approach translational research in their present and future work. The course covers the core competencies in clinical and translational research, and each session addresses a core thematic area.

DMSc DIDACTIC COURSES

- **DMSC 710 Healthcare System Science, Organizational Macroeconomics and Finance (3 credits)**
  This course focuses on understanding the healthcare macroeconomic ecosystem and the unique and innovative Maryland waiver system. The course introduces key concepts and analytical methods for formulating strategies that add value for patients as well as for providers and other organizations that affect health care delivery. The course covers foundational concepts of practice coding and reimbursement along with the strategic management of resources, partnerships, and innovation, for organizations that offer healthcare services in multiple areas. Through the application of course concepts to complex cases, the course develops depth of understanding and critical thinking skills in strategy formulation for future leaders involved in health care delivery and ongoing quality improvement

- **DMSC 712 Health Care and Education Legal Principals and Policy (3 credits)**
  This survey course covers current federal and state legal principals governing the provision of healthcare and clinical education. The course will focus on three major themes: quality of care, access to care, and clinical education. Students will learn about professional licensure, disability, equitable care and access, malpractice, the provider-patient relationship, informed consent, the regulation of healthcare facilities, public and private insurance regulation, and the application of professional ethics in healthcare.

- **DMSC 714 Applied Leadership and Advocacy (3 credits)**
  Leading is a complex endeavor and involves vision, passion, purpose, and the ability to make decisions under pressure and uncertainty while motivating others. This course analyzes the symbiotic relationship between leadership and decision-making and advocacy, combining ethics, recent research, adaptive leadership theory and reflective practice to teach leadership, decision-making and advocacy skills.

- **DMSC 715 Technology Literacy, Utilization, and Integration into Practice (3 credits)**
  Although digital technologies and breakthrough science hold immense potential for enhancing health care, in terms of empowering patients, improving access and equity, and delivering better health outcomes. Health care's digital transformation lags behind that of other industries. This course aims to help learners unlock hidden potential to improve health care by providing a framework to enable learners to think strategically about digital solutions, develop and deploy them in health care's unique culture and ecosystem, and navigate the sometimes-competing needs of healthcare's multiple stakeholders.

- **DMSC 716 Clinical Learning and Practice Reflection (3 credits)**
  Every doctoral student should be prepared to teach effectively. The focus of this course will be to prepare the student to be an effective clinical or field educator. Students will explore best practices, grounded in adult learning theory and evidence-based education for delivering and evaluating educational content across various domains (virtually or in-

person) for diverse learning audiences. The impact of emotion and learning, intercultural leadership, communication, and professionalism will be explored in this course.

- **DMSC 717 Evaluation, Synthesis and Critical Appraisal of Literature (3 credits)**
  Participants in this course will develop proficiency in engaging in the evaluation and synthesis of research in their field. This course addresses foundational competencies for generating pertinent research questions, conducting academic reviews, engaging in critical appraisal, and synthesizing literature in a scholarly format to facilitate participants' contribution to the body of knowledge within their field. Part two of the course will build upon foundational MSHS course work, applying the principles and methods of quantitative and qualitative methods appropriate for applied health research. Learners will engage in evaluating research studies using a variety of methodologies to identify their application to specific field questions and develop their ability to analyze and interpret research data. Learners will produce the framework for a research project reflective of a design appropriate for their research question and field of practice in an applied topic.

- **DMSC 719 Scholarship: Writing, Publishing and Presenting (3 credits)**
  This course will provide students with the foundational skills necessary to engage in academic writing for preparation and presentation across a spectrum of scholarly outlets (journals, conference presentations, conference abstracts, technical reports, book chapters, etc.). Students will engage in the construction of logical arguments, the reporting and interpretation of data, generation of conclusions/discussions, recognition of target audience in selection of style, tone, voice, etc. as well as the process of redrafting and editing being mindful of feedback from colleagues and co-writers. Students will have opportunity to develop skills for peer review and development of constructive feedback.

- **DMSC 720 Improving Healthcare Quality, Equity and Outcomes (3 credits)**
  To achieve more equitable healthcare leaders need to engage with communities where they provide care, commit to the larger programs at the federal and state levels, and take an introspective view of their own organizations. Participants in this course will apply previously learned knowledge and skills to engage with their local communities, advocate locally, regionally, and nationally for PA inclusion and implement quality improvement interventions relevant to their practice setting in pursuit of health equity.

DMSc Clinical Learning

- **DMSC 713 Impact Lab/Clinical Symposium I (6 credits)**
  Designed to help busy PA professionals advance their knowledge and keep current by providing a review of innovations, recent advances, and best practices affiliate disciplines specialty groups. Focus will be on improving care quality and outcomes. Hands on impact labs will be conducted. At the conclusion of the symposium, participants will be able to: Describe and implement new diagnostic modalities, therapeutic agents, and management strategies in their respective specialty. Recognize and implement best practice, management. and care transfer of complex patients with significant comorbidities. Discuss the current and future management of patients. Impact lab topics

may include 1) Ultrasound 2) Telehealth 3) Digital Monitoring 4) Advanced procedures.

- **DMSC 718 Impact Lab/Clinical Symposium 2 (6 credits)**
  This course builds upon DMSC 713 and is designed to help busy PA professionals advance their knowledge and keep current by providing a review of innovations, recent advances, and best practices. Focus will be on improving care quality and outcomes. Hands on impact labs will be conducted. At the conclusion of the symposium, participants will be able to: 1) Describe and implement new diagnostic modalities, therapeutic agents, and management strategies in their respective specialty; 2) Recognize and implement best practice, management. and care transfer of complex patients with significant comorbidities; 3) Discuss the current and future management of patients. Impact lab topics may include but are not limited to Ultrasound, Telehealth, Digital Monitoring, and advanced procedures.

- **DMSC 821 Capstone (4 credits)**
  DMSc students will choose a practice-based issue or problem in need of improvement during their clinical symposia courses. During the program they will define and seek to deeply understand an issue, investigate, and choose solutions or an intervention, design, and implement a pilot, collect, analyze, and present outcomes in a poster, presentation, or publication at a regional or national meeting or peer reviewed publication.

- **DMSC 822 Special Topics (1-6 credits)**
  This course is tailored to meet the needs of an individual student and involves considerable self-directed learning to address an area in need of further review, remediation, or repeated content.

ELECTIVES (5 credits)

Potential electives include UMB Graduate School courses offered at the 600 level or above. Selection will be based on student learning needs, preferences, and goals and subject to program director approval and course availability. The list provided is not comprehensive and subject to change. Possible electives include course from the HPE MS/PhD, Intercultural Leadership PBC, and other health systems or services coursework.

- **MHS 607 Writing for Scholarly Publication (3 credits)**
  This course provides students with a comprehensive overview of the process of writing for scholarly journals, focusing on the IMRD (Introduction, Methods, Results, Discussion) format commonly used for empirical work. Students will read and analyze articles from a variety of journals, focusing on both form and content of research articles, case studies, meta-analyses, and book reviews. Students will apply the course content to their own writing throughout the course, culminating in a portfolio of their revised work based on extensive instructor feedback. Students can use their existing research to produce the various writing assignments during the course and use this as an opportunity to submit an article for publication.

- **INCL 625 Intercultural and Cross-Cultural Communication (3 credits)**
  The purpose of this course is to study communication within the context of the cultural setting. The three main goals are: to provide students with materials, both cognitive and experiential, with which they can develop an awareness of their own cultural identity; to increase their knowledge of the special communication problems to be expected in a cross-cultural situation; and to offer students the opportunity to apply new insights to cross-cultural encounters.

- **INCL 640 Practical Application of Intercultural Leadership (3 credits)**
  In this course students will learn and practice applying concepts of intercultural development to various aspects of their personal and professional life. Students will also gain tools to continue learning and developing their intercultural skills over the course of their lifetime.

- **DEIL 710 Employment Discrimination Law & Policy Framework (3 credits)**
  This course examines basic terminology and concepts related to diversity, equity, and inclusion through the exploration of US laws such as Title VII of the Civil Rights Act of 1963, the Age Discrimination in Employment Act of 1967, the Americans with Disabilities Act of 1990, and similar laws and legal protections for certain classes of individuals. This course will help current and aspiring diversity, equity, and inclusion practitioners to establish a structured framework for systematic analysis of employee issues that may have legal implications.

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

   Not applicable.

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

   There is no current specialized accreditation or graduate certification requirements for the proposed Doctor of Medical Science.

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

   Not applicable

6. **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 Graduate School maintains up-to-date information of its degree programs on the program explorer website (https://www.graduate.umaryland.edu/Program-Explorer/). The website has information on the curriculum, course descriptions, degree requirements, and cost of education. The website 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 Doctor of Medical Science.

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 Graduate School at UMB affirms that all advertising, recruiting and admissions materials will accurately represent the Doctor of Medical Science, as do all materials produced by UMB's Graduate School for programs it offers.

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

The following table summarizes information about the faculty who will be responsible for designing and instructing coursework in the Doctor of Medical Science program:

Name	Terminal Degree and Discipline	Rank and FT/PT Status	Course
UMB Faculty			
Mary Jo Bondy	DHEd, MHS, PA-C Health Education	Associate Professor FT	DMSC 714, DMSC 716, DMSC 717
Karen Gordes	PhD-Public Policy, DPT	Associate Professor FT	DMSC 717
Gerald Kayingo	PhD-Microbiology, MBA, PA-C	Professor FT	DMSC 710, DMSC 719
Jim Cawley	MPH/PA-C	Professor PT	DMSC 712, DMSC 714, DMSC 719
Niya Werts	PhD-Information Systems	Associate Professor FT	MHS 630, MHS 608, DMSC 715
Cheri Hendrix	DHEd, PA-C Health Education	Associate Professor FT	DMSC 712, DMSC 719
Shani Fleming	MSHS, MPH, PA-C	Associate Professor FT	Intercultural Electives

Larissa Odessky	PharmD	Assistant Professor FT	MHS 608, MHS 652
Theresa Neumann	MMS, PA-C	Associate Professor FT	DMSC 714
Isabell May	PhD-Civilization	Associate Professor FT	MHS 607
Larry Magder	PhD- Biostatistics, MPH	Professor FT	MHS 615
Mike Grasso	MD/PhD-Computer Science	Assistant Professor UMB School of Medicine	DMSC 715
Additional Faculty			
Wei Chao Chang	PhD-Health Science, DHSc, PA-C	Adjunct Professor	MHS 608, DMSC 713, DMSC 718
Jack Goble	DMSc, PA-C	Adjunct	DMSC 720
Jen Grover	DHSc, MMS, PA-C	Adjunct	DMSC 713, DMSC 720
Patty Alvarez	PhD-College Student Personnel	Adjunct	MHS 652
Roger Ward	JD, EdD	Provost, Dean and Executive Vice President UMB Graduate School, FT	DMSC 712
Jenny Owens	ScD, MS	Associate Dean of Academic Affairs, UMB Graduate School FT	MHS 652
Emilie Ludeman	MSLIS	Adjunct	MHS 600
Sarah Archibald	PhD-Public Policy MS	Associate Professor FT	MHS 602

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

The Learning Management Platform UMB utilizes and provides IT support for is the Blackboard Learning Management System for online and in-person course delivery. Within Blackboard is the Collaborate conferencing software that we will use for our synchronous live activities, i.e., orientation and presentation of face-to-face class sessions and recurring webinars. Additionally, the Faculty Center for Teaching and Learning which houses expert Instructional and Educational Medial Specialists, uses of a video camera to record lectures, integrates webcams, and utilizes an interactive smart board. We also use the Camtasia software for screen lecture capture.

J. Adequacy of Library Resources

The University of Maryland, Baltimore's Health Sciences and Humans Services Library (HS/HSL) collection contain more than 30,000 electronic journals, 162 current print journals, approximately 170,000 books, and 6,000 electronic books. Students can access the electronic resources offered on the library website by logging in with their University ID number. The library serves as the regional medical library for 10 southeastern states as part of the National Library of Medicines National Network of Libraries of Medicine. In addition to the library services and collections, the building also houses computing services. Faculty librarians provide direct service to students. They use subject expertise to develop online resources and provide in-person consultations.

The HS/HSL is one of the largest health sciences libraries in the United States with a track-record of user-centered innovative services and programs. The library consists of 57 employees including 27 faculty librarians. The attractive and vibrant facility, which opened in 1998, serves as a hub for collaboration and learning with resources, programs, and tools that promote discovery, creativity, and innovation. With wireless connectivity throughout the building, the HS/HSL has 45 group study rooms, three computer classrooms, an Innovation Space which includes 3D printers; a presentation and practice studio, art gallery, and multiple technology enhanced meeting spaces. Through the HS/HSL's website (www.hshsl.umaryland.edu,) the UMB community has access to a full range of resources and services.

The HS/HSL supports the University's students, faculty, and staff members in the schools of dentistry, law, medicine, nursing, pharmacy, and social work; the Graduate School; the University of Maryland Medical Center; and other affiliated institutions. Research Connection, the library's suite of research services, is available for all programs on campus and includes individual research consultations, a systematic review service, research impact assessment,

reference assistance, and more. For over 30 years, the HS/HSL has provided liaison services, in which faculty librarians are assigned to work with specific user communities. Faculty librarians have many years of instructional experience in the classroom, in the community, and the online environment. In FY16, faculty librarians reached 4,131 faculty, staff, and students through online, and in-person instructional sessions offered through the curriculum and in library-sponsored workshops.

In FY16, the HS/HSL licensed 116 databases, 4,524 journals, 18,018 e-books, and maintained a print collection of 360,104 volumes. One hundred percent of the current journal subscriptions are available electronically. Through its interlibrary loan and document delivery service, library staff can acquire articles and other resources not available through the library's collections. These are secured through local, regional, and national networks including the University System of Maryland and Affiliated Institutions, the National Library of Medicine's DOCLINE service, and OCLC, among others. The HS/HSL is also home to the National Network of Libraries of Medicine/Southeastern Atlantic Region (NNLM/SEA), whose mission is to advance the progress of medicine and improve the public health by providing all U.S. health professionals with equal access to biomedical information and improve the public's access to information to enable them to make informed decisions about their health. With only eight regions in the U.S. designated as regional medical libraries under contract to the National Library of Medicine at the National Institutes of Health, the Southeastern/Atlantic Region serves ten southeastern states, Puerto Rico, the U.S. Virgin 18 Islands, and the District of Columbia. The HS/HSL has held this competitive and prestigious designation for over 30 years.

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

UMB's 71-acre research and technology complex encompasses 67 buildings in west Baltimore near the Inner Harbor. Faculty have offices provided within their respective departments and the Graduate School has identified office space to house the Program Manager Specialist and instructional technology personnel. UMB has adequate facilities, infrastructure, and equipment to support any distance learning needs of the Doctoral Program. Students will have full access to the computing facilities at UMB. Students will be provided with UMB e-mail and library accounts and will have complete journal searching ability via PubMed. UMB possesses computing facilities that includes 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

No new general funds will be required for implementation of the proposed DMSc which will be coordinated and administered fully through the Graduate School. A budget is included in Appendix A.

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. Formal assessment planning is already in place throughout UMB Schools including the Graduate School. 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. Additional evaluation includes tracking of student retention, grade distributions, and cost-effectiveness, and regular academic program reviews consider these factors.

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. Recruitment efforts for the DMSc will include specific outreach to Historically Black Institutions to make students aware of the program and related opportunities designed to improve their competitiveness in the job market and reach their professional goals if they are admitted and successfully complete the program.

O. Relationship to Low Productivity Programs Identified by the Commission

The proposed DMSc 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

As the State's public health, law, and human services university, the mission of UMB is to excel at professional and graduate education, research, patient care, and public service, and to educate leaders in healthcare delivery, biomedical science, global health, social work, and the law. Also, UMB emphasizes interdisciplinary education in an atmosphere that explicitly values civility, diversity, collaboration, and accountability. UMB expects to achieve its mission in education excellence and to be competitive; the Graduate School has designed and offered online degree programs that respond to the following changes occurring in higher education (Allen, 2010).

1. Education Pipeline. The education pipeline includes future enrolled PA students in Maryland and Regionally as well as over 3000 clinically practicing PAs in Maryland as the prospective applicant pool. Prospective students are typically working adults who pursue part-time and non-residential educational opportunities, but who wish to remain in their regional geographic area, while pursuing advanced education. According to the National Center for Education Statistics, National Postsecondary Graduate Student Aid Study (NCES, NPSAS: GR; 2017), between the period of 2008 and 2017, there was a slight increase (3%) in the number of graduate students reporting full-time (FT) enrollment at a single institution. We suspect this may be partially influenced by availability of new online educational programs, where one can work, be considered enrolled FT, yet negotiate academic studies as one's lifestyle permits.

2. Changing Demographics. Data indicate a shift from the traditional student (the 18-22-year-old, full-time resident) to older students studying part-time. In 2015-2016, the National Center for education Statistics (NCES, 2017) reported that 37.58% of graduate students were married and the average graduate student was 32 years old (*SD*= 9.66). 9% of single/unmarried/divorced graduate students reported dependents, and nearly 60% of graduate students were female.

3. Technology Shift. Educational research suggests that online education achieves the same as, or better student learning outcomes, than traditional face-to-face delivery models (Tallent-Runnels, et al., 2006; Means et al., 2009. Online delivery is far outpacing traditional forms of educational delivery. Between 2002 to 2008, online enrollments grew at an annual rate of 19% vs. 1.5% versus all Higher Education. By the fall of 2008, 25% (4.6 million) of all students took at least one online course. In 2019, the top five highest reported college enrollments nationally four were online universities, offering at least some graduate programs (NCES).

4. Growth of Mobile Technologies. Mobile technologies and miniaturization are changing the computing environment and the educational delivery paradigm. Technologies like netbooks, e-Readers, iPhones, and iPads have revolutionized the delivery space and to provide anywhere, anytime learning.

5. Web 2.0 Revolution. Other technologies that are already figuring widely into the future of education are part of the Web 2.0 revolution. The use of a variety of technologies is disaggregating the educational experience into 'the cloud'. Many of the technologies for the future, like blogs, wikis, podcasts, video, social networking and social media, virtual worlds, mobile learning, and Personal Learning environments, will have profound effects on the future learning landscape.

Online education represents a strategy that can address the restrictions of traditional onsite college courses, opening up accessibility for variety of learners, for a variety of reasons and expanding access to global education opportunities and expertise, beyond the walls of the campus. Major determinants of successful online programs include 1) course design that incorporates best practices (e.g., course alignment, integration of technology and content), 2) quality faculty who can engage students in the material (e.g., provide feedback and relevant expertise), and 3) provide responsible academic oversight. All three of these determinants are present in this proposal.

Collectively, the distance learning team will provide the following services to ensure that best pedagogical practices are used to train and support the most of effective presentation of their course content.

- Guided tutorials on the online course development process, with open questions and answer session.

- Written instructions accompanied by training videos to guide faculty on how to use the learning management system.
- A manual for the faculty regarding principles of good practice and the pedagogy of distance education.
- Provide timely support to the faculty in the use of the technology and trouble shoot any problems that might arise during the course of instruction.
- Work with faculty to design and develop courses, monitor the delivery of the course, and assess and revise the course for future offerings.

Supporting Students in Distance Education

Most of the courses for the Doctor of Medical Science will be online. Students enrolled in the clinical symposium and practicum courses will be attend short impact labs requiring four days of intense instruction and practice. We realize that the key to the success of the online courses is dependent on a) students knowing upfront the assumptions, requirements and responsibilities of taking an online course, 2) the ability of students to have the background, knowledge, and technical skills to undertake an online program; and 3) ~~their~~ students having access to academic and technical support services to support their online activities. Accordingly, we will provide the following services to support the students in accessing distance learning technology:

- Communicate to students the nature of online learning, including their requirements, roles and responsibilities, and access to support services. All of our advertising, recruiting, and admissions materials shall clearly and accurately represent the program and the services available.
- Ensure that enrolled students shall have reasonable and adequate access to the range of student services to support their learning.
- Ensure that accepted students will have the background, knowledge, and technical skills needed to undertake the program.
- Make the HS/HSL (library) services available to students so that they can have access to research databases, online catalog of books and media, chat with or e-mail a Librarian, electronic interlibrary loan, and more.

Evaluation and Assessment of Online Courses

We will adhere to a quality improvement model for assuring the continuous quality of the online courses. The process will involve the following steps:

1. Assessment of course readiness as measured by our quality indicators of best practices (including assessment of faculty readiness).
2. Monitoring of course delivery as assessed by the instructional designers with use of our "course evaluation rubric."
3. Obtainment of feedback from the faculty, students, and instructional designers.
4. Analysis of feedback as performed by the Distance Learning Committee.

5. Institute course revisions based on comments by the Distance Learning Committee.

Finally, to ensure the sustainability of the distance learning program, the Academic Affairs Office at UMB affirms the following:

- UMB Policies for faculty evaluation includes appropriate consideration of teaching and scholarly activities related to programs offered through distance learning.

- Commitment to ongoing support, both financial and technical, and to a continuation of the program for a period sufficient to enable students to complete a certificate.

APPENDIX A: BUDGET

TABLE 1: PROGRAM EXPENDITURES:					
Expenditure Categories	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
1. Faculty (b + c below)	$153,600	$275,200	$275,200	$377,600	$377,600
a. Number of FTE	1.00	1.80	1.80	2.60	2.60
b. Total Salary	$120,000	$215,000	$215,000	$295,000	$295,000
c. Total Benefits	$33,600	$60,200	$60,200	$82,600	$82,600
2. Admin. Staff (b + c below)	$19,320	$20,000	$47,950	$47,950	$47,950
a. Number of FTE	0.20	0.20	0.50	0.50	0.50
b. Total Salary	$14,000	$14,340	$35,000	$35,000	$35,000
c. Total Benefits	$5,320	$5,660	$12,950	$12,950	$12,950
3. Support Staff (b + c below)	$7,535	$7,686	$7,839	$7,997	$7,997
a. Number of FTE	0.10	0.10	0.10	0.10	0.10
b. Total Salary	$5,500	$5,610	$5,722	$5,837	$5,837
c. Total Benefits	$2,035	$2,076	$2,117	$2,160	$2,160
4. Technical Support and Equipment	$5,000	$12,000	$12,000	$12,000	$12,000
5. Library	$0	$5,000	$5,000	$5,000	$5,000
6. New or Renovated Space	$0	$0	$0	$0	$0
7. Other Expenses	$5,000	$0	$0	$0	$0
TOTAL (Add 1 – 7)	**$190,455**	**$319,886**	**$347,989**	**$450,547**	**$450,547**

TABLE 2: PROGRAM RESOURCES					
Resource Categories	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
1. Reallocated Funds	$0	$0	$0	$0	$0
2. Tuition/Fee Revenue (c + g below)	**$152,961**	**$289,941**	**$406,374**	**$456,600**	**$456,600**
a. Number of F/T Students*	0	0	0	0	0
b. Annual Tuition/Fee Rate	$0	$0	$0	$0	$0
c. Total F/T Revenue (a x b)	**$0**	**$0**	**$0**	**$0**	**$0**
d. Number of P/T Students	10	20	30	40	40
e. Credit Hour Rate	$761	$761	$761	$761	$761
f. Annual Credit Hour Rate	20.1	19.05	17.8	15	15
g. Total P/T Revenue (d x e x f)	**$152,961**	**$289,941**	**$406,374**	**$456,600**	**$456,600**
3. Grants, Contracts & Other External Sources	$0	$0	$0	$0	$0
4. Other Sources (Graduate School Tuition)	$37,494	$29,945	$0	$0	$0
TOTAL (Add 1 – 4)	**$190,455**	**$319,886**	**$406,374**	**$456,600**	**$456,600**

Expenses Narrative: The table includes anticipated costs of hiring a faculty program director including salary and benefits as well as estimated costs for faculty and support staff to launch and develop the program. This financial analysis was built estimating approximately 30% of students enrolling in this program will be use existing PA or Health Science coursework for partial fulfillment of credits, and 70% of students enrolling in this program will take the full 60 credits. By utilizing resources shared across the Graduate School, UMB is maximizing resource to control costs. An initial $20,000 expenditure is included to design, create and purchase degree specific promotional materials to advertise, promote, and attend recruiting events.

Resource Narrative: Anticipated revenue based on enrollment is projected in the resource narrative with initial shortfall for program costs being funded by Graduate School tuition funds, with anticipated ability to self-fund by year three.

APPENDIX B: PLAN OF STUDY
Part-Time Plan of Study, Fall Start (60 credits)

Semester	Course	Credits	2023	2024	2025
Year 1					
Fall					
MHS 600	Introduction to Library Resources and Scholarly Writing	1 credit	X	X	X
MHS 615	Biostatistics for Health Professionals	3 credits	X	X	X
MHS 608	Research Seminar 1	3 credits	X		
Spring				X	X
MHS 630	Epidemiology of Infectious and Chronic Disease	3 credits	X	X	X
MHS 652	Leadership and Communication	3 credits	X		
Summer				X	X
MHS 602	Ethics for Healthcare Professionals	2 credits	X		
DMSC 713	Impact Lab/Clinical Symposium 1	6 credits	X		
	Credits Year 1	21 credits			
Year 2					
Fall					
DMSC 710	Healthcare System Science, Organizational Macroeconomics and Finance	3 credits		X	X
DMSC 712	Health Care Law, Policy, and Ethics	3 credits	X	X	X
Spring					
TBD	Elective 1	3 credits		X	X
DMSC 714	Applied Leadership and Advocacy	3 credits		X	X
Summer					
DMSC 718	Impact Lab/Clinical Symposium II	6 credits		X	X
	Credits Year 2	18 credits			
Year 3					
Fall					
DMSC 715	Technology Literacy, Utilization, and Integration into Practice	3 credits		X	X
DMSC 716	Life-Long Learning and Practice Reflection	3 credits		X	X
Spring					
DMSC 717	Evaluation, Synthesis and Critical Appraisal of Literature	3 credits			X
TBD	Elective 2	3 credits			X
Summer					
DMSC 719	Scholarship: Writing, Publishing and Presenting	3 credits			X
DMSC 720	Improving Quality, Equity and Outcomes	3 credits			X
	Credits Year 3	18 credits			
Year 4					
Fall					
DMSC 821	Capstone	3 credits			X
	Total	60 credits			

Part-Time Plan of Study, Fall Start

Advanced standing example of a UMB PA/MSHS Graduate

Semester	Course	Credits	2023	2024	2025
Year 1					
Fall					
DMSC 710	Healthcare System Science, Organizational Macroeconomics and Finance	3 credits	X	X	X
DMSC 712	Health Care Law, Policy, and Ethics	3 credits	X	X	X
Spring					
TBD	Elective 1	3 credits		X	X
DMSC 714	Applied Leadership and Advocacy	3 credits		X	X
Summer					
DMSC 713	Impact Lab/Clinical Symposium I	6 credits		X	X
	Credits Year 1	18 credits			
Year 2					
Fall					
DMSC 715	Technology Literacy, Utilization, and Integration into Practice	3 credits		X	X
DMSC 716	Life-Long Learning and Practice Reflection	3 credits		X	X
Spring					
DMSC 717	Evaluation, Synthesis and Critical Appraisal of Literature	3 credits			X
TBD	Elective 2	3 credits			X
Summer					
DMSC 718	Impact Lab/Clinical Symposium 2	6 credits			X
	Credits Year 2	18 credits			
Year 3					
Fall					
DMSC 719	Scholarship: Writing, Publishing and Presenting	3 credits			
DMSC 720	Improving Quality, Equity and Outcomes	3 credits			
Spring					
DMSC 821	Capstone	3 credits			
	Credits Year 3	9 credits			
	Credit subtotal	45 credits			
	Credits for partial fulfillment	15 credits			
	Credit total	60 credits			

Bibliography

American Academy of Physician Associates Salary Report (2022)
Physician Assistant Education Association Faculty and Directors Survey (2020)
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