UNIVERSITY of MARYLAND BALTIMORE

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

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Sanjay K. Rai, Ph.D., Secretary of Higher Education
Maryland Higher Education Commission (MHEC)
6 N. Liberty Street, 10th Floor
Baltimore, MD 21201

November 1, 2024

Dear Dr. Rai:

On behalf of the University of Maryland, Baltimore please find attached our proposal to establish a new Academic Program, *Master of Science in Medical and Health Studies,* within the School of Medicine. This proposed academic program is being simultaneously submitted for approval to the University of Maryland Board of Regents.

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 at mbojo@umaryland.edu or 410-706-2055.

Regards,

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

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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 # JE313899 ( ) Check #

Payment Amount: 850.00

Date Submitted: 10/3/2024

Department Proposing Program	University of Maryland School of Medicine	
Degree Level and Degree Type	Master of Science	
Title of Proposed Program	M.S of Medical and Health Studies	
Total Number of Credits	62	
Suggested Codes	HEGIS:	CIP: 51.1401
Program Modality	(●) On-campus ( ) Distance Education (fully online) ( ) Both	
Program Resources	(●) Using Existing Resources ( ) Requiring New Resources	
Projected Implementation Date (must be 60 days from proposal submisison as per COMAR 13B.02.03.03)	( ) Fall (●) Spring ( ) Summer	Year: 2025
Provide Link to Most Recent Academic Catalog	URL: https://www.medschool.umaryland.edu/ome/curriculum/	
Preferred Contact for this Proposal	Name: Meghan Bruce Bojo	
	Title: Executive Director, Academic Administration	
	Phone: (410) 706-2055	
	Email: mbojo@umaryland.edu	
President/Chief Executive	Type Name: Dr. Roger Ward	
	Signature:	Date: 11/1/2024
	Date of Approval/Endorsement by Governing Board:	

Revised 1/2021

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

[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

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 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.

[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

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.

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]

- 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

[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

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
- 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

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

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.

Clinical Problem-Solving and Application**:** 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.

Interdisciplinary Learning and Team-Based Approaches: 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.

Preparation for Clinical Practice: 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 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

[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

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, 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 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.