

Biomedical Sciences Program Review 2022

University of Wisconsin-Milwaukee

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Section 1: Executive Summary

The Biomedical Sciences undergraduate program houses a single major (BMS) and several submajors, which have similar curricula until the fourth year.

Biomedical Sciences (BMS)

- Biomedical Sciences submajor; current enrollment 71, annual degrees 10
- BMS-Medical Laboratory Sciences submajor; current enrollment 155, annual degrees 28
- BMS-Public Health Microbiology Submajor; current enrollment 10, annual degrees 3
- BMS-Cytotechnology Submajor; current enrollment 4

Diagnostic Medical Imaging (DMI)

- BMS-Radiological Technology Submajor; current enrollment 129, annual degrees 26
- BMS-Diagnostic Medical Sonography Submajor; current enrollment 110, annual degrees 10

Programs for non-traditional students or retention

- BMS-DMI degree completion, traditional and Flexible Option; current enrollment 125, annual degrees 90.
- BMS-Health Sciences degree completion, traditional and Flexible Option; current enrollment 85, annual degrees 58
- BMS-Health Sciences capture degree for students who have not progressed in their intended plan

Enrollments are healthy, limited in BMS and DMI only by the number of locally available clinical placements for students. However, the department is overall short-staffed, with only 3 tenure track faculty (plus an external chair and one faculty member as Associate Dean), a total of 8.25 Instructional Academic Staff and .50 of an administrative support staff member. While the department has worked hard to adapt to reduced resources, this skeleton crew leaves the department and its students vulnerable. Right now, if one person took extended medical leave, retired or left the university, it would be difficult for many of these programs to function.

Nearly all the BMS and DMI majors gain accreditation soon after graduation; they are eagerly sought after in the region and hired soon after graduation. Lab science and imaging health professionals are a key component of the health care industry in southeast Wisconsin, and they are crucial to patient care. The shortage of laboratory scientists that existed before COVID has only worsened with the massive amount of testing required, and many DMI jobs go unfilled at the moment. So, the department's main task right now is stabilizing and then growing its ability to educate and graduate these important health works.

Section 2: Actions Since Previous Review

A. Response to Previous Review

The main recommendations from the 2012 review were to increase the number of faculty and decrease the number of submajors.

1. Some faculty were added in the wake of that report, but for a variety of reasons the number of faculty is at an all-time low. The department is significantly under-resourced. Starting in 2020, the department has required augmentation just to have a minimal executive committee. Currently, there are three faculty at the senior level, and starting in Fall 2022, one will be Associate Dean and one will be department Chair. This means that the EC will have to be augmented until one of the junior faculty gets tenure in 3-4 years. The only full professor is of retirement age, and even though they have no plans to retire, the situation is unstable. Given the department generates a large number of credits at a favorable SHC/FTE ratio (around 600 SCH per FTE), the situation needs to be addressed with two hires, and one at the associate level. The department remains strong in instructional academic staff, who fulfill accreditation requirements as credentialed professionals, and include four PhDs, five MSs, two BSs.
2. As noted in the original response, the sub-majors have remained unchanged. They are in cooperation with other programs, and their marginal cost to the department is effectively nil. In addition, since the 2012 review, the major has added three submajors: Diagnostic Imaging degree completion, Health Sciences degree completion and the Health Sciences BS degree. All are targeted to non-traditional or at-risk student groups. The Flexible Option version of the degree completion programs is supported through UWEX Flexible funding and managed as a college-wide program

B. Opportunities and Challenges

Describe any intervening developments that supported or challenged the response since the previous review, such as changes in the discipline, student demand, societal need, or institutional context.

Even though UWM's overall enrollment has shrunk by 25% and then number of students by 50%, the number of students in BMS programs have increased slightly. Demand for students in both Diagnostic Medical Imaging and Medical Lab Science remains very high, and even more so in MLS given the needs generated by the COVID pandemic. The number of students in BMS outside of those areas (getting a BMS degree but not MLS or DMI certification) remains strong. However, securing sufficient clinical education placements for MLS and Radiography program remains a challenge, since we compete with other programs for a limited set of spaces.

The Department has been impacted by UWM's changes in distance education funding. BMS benefited from CHS eLearning fee revenue sharing, and CHS and BMS followed governance policies that directed the use of funds in an ethical and student-oriented manner. Yet changes to the UWM technology fee structure have resulted in about a 75% reduction overall to CHS and 100% to BMS, resulting in an annual revenue loss of approximately \$66,000.

An important challenge of the department now is faculty staffing. As it moves to becoming a School of Biomedical Sciences in 2023, it will become more urgent to have enough faculty to do the business of the department and staff the academic courses. The department required augmentation to its Executive Committee in 2020-2022 and will continue to do so unless this problem is addressed.

Section 3: Department/Program Overview

A. Department/Program Mission and Organizational Structure

1. *Discuss the department's mission statement in the context of UWM's strategic priorities.*

UWM's strategic directions (<https://uwm.edu/chancellor/strategic-directions>) are:

- Diversity, Equity and Inclusion
- Outstanding Learning Environment
- Research Excellence
- Community Engagement and Talent Pipeline
- Sustainable Future for the Campus
- Campus Strategic Planning

BMS Vision

We envision the Biomedical Sciences Program as a nationally recognized leader in the generation, dissemination, and application of knowledge that advances the science of health and the diagnosis of disease and practice of diagnostic disciplines through our graduate and undergraduate programs.

BMS Mission

The mission of the Biomedical Sciences Program is threefold:

1. Research Excellence

Our faculty and staff will produce recognized basic and applied research that influences the science and practice of medical sciences. To build upon our recognition as a leader in the generation of knowledge, we will recruit, develop, and maintain high quality researchers and facilities.

Though under-resourced, BMS works to sustain strong research productivity. Both faculty and staff are active researchers. We believe this also adds to teaching excellent, since students' classes and research experiences are led by active researchers.

2. Teaching Excellence

Our faculty and staff will produce professional practitioners, managers, educators, and researchers that are uniquely prepared for the dynamic environment of healthcare and are recognized by employers as being of the highest quality. To this end our academic programs will be flexible, innovative, and responsive to the changes in our areas of practice. This will be accomplished, in part, through partnerships with health care providers and industry.

The department prides itself on outstanding academic and professional preparation for students. Our major includes about 27% underrepresented students, and persistence, graduation and licensure rates are extremely high for all our students. The MLS and DMI submajors serve as important talent pipelines for both students who declare as first year students and those who change majors into them. The vast majority of our graduates work in the greater Milwaukee area and remain part of the network of health professionals.

3. Service Excellence

Our faculty and staff members will commit themselves to providing service that enhances the missions of our College and of the University by addressing the educational, environmental and economic needs of the local, state, and national healthcare community.

Our faculty volunteer and consult in numerous ways, including service on numerous CHS and UWM committees, service to their scholarly and professional organizations, as well as in local communities.

See: Appendix 2.A, Faculty Service

2. Describe the organization of the unit as it relates to the undergraduate program. Note the relationship with related units/programs.

The Department of Biomedical Sciences is comprised of the Biomedical Sciences Program and its submajors. It is one of five departments that currently comprise the College of Health Sciences. The other Departments in the College include Kinesiology, Rehabilitation Sciences and Technology, Communication and Disorders, Health Informatics and Administration.

Administrative Structure

BMS Department of Chair: Dr. William Keith (Dr. Dean Nardelli as of 8/2022)

BMS Graduate Program Coordinator: Dr. Janis Eells

BMS Undergraduate Laboratory Program Coordinator: Dr. Zachary Lunak

Director of the Radiographic Technology Program: Jayne Wisniewski

Director of Sonography Program: Dr. Richard Dettman

See: Appendix 2.B

Organizational Chart for the College of Health Sciences

Organizational Chart for the Department of Health Sciences

3. Describe the mechanisms for governance of the program, and student involvement, including committee membership and participation in curricular policy making.

The governance structure is dictated in part by the UW-System Policies & Procedures. The Department of Health Sciences Executive Committee which is comprised of the tenured faculty from the Biomedical Sciences Program oversight on issues related to workload, personnel, and budget.

In addition, the BMS Program includes instructional staff which also actively participate (all are voting members of the department) in the governance of the program. Both graduate and undergraduate students are invited to serve on the search & screen committees and participate in the program accreditation and other program review processes.

B. Facilities and Resources

1. Assess the resources currently available to the program, including staff, physical facilities, and budget allocation. Comment on patterns of total salaries, capital, and supply expenditures over the past 7 years. Discuss the allotment of those expenditures to undergraduate instruction. Discuss how current resources will be used to meet future goals of the program.

Staff

Currently the program has about 15.5 FTE per year, distributed across tenure-track faculty, instructional academic staff and ad hocs. This is down from around 22 FTE ten years ago.

Budget

The CHS budget allocation to the department is as follows:

Funds: 101,131,136,150,189					
Depts: CLINICAL-					
BMS January 2021					
Account	Budget	Jan	Actuals	Encumbrances	Balance
REVENUE					
Total Revenue					
-Revenues					
--Other Revenue	\$0	\$0	\$725	\$0	(\$725)
--Transfers	\$0	\$0	\$54,025	\$0	(\$54,025)
TOTAL	\$0	\$0	\$54,750	\$0	(\$54,750)
EXPENSES					
Expenses-Salary-Fringes					
-Permanent Salaries					
--Total Unclassified Salaries	\$1,485,392	\$122,359	\$781,899	\$593,824	\$109,669

--Total Univ Staff Salaries	\$26,895	\$1,988	\$15,179	\$11,720	(\$4)
-LTE and Student Salaries					
--Student Salaries	\$2,925	\$0	\$324	\$0	\$2,601
-Fringe Benefits Plan UW					
--Fringe Benefit Budget	\$593,560	\$0	\$0	\$0	\$593,560
--Fringe Benefits	\$0	\$46,732	\$325,026	\$0	(\$325,026)
--Classified Fringe Benefits	\$0	\$234	\$1,790	\$0	(\$1,790)
-Supplies PlanUW					
--Travel	\$11,000	\$0	\$0	\$0	\$11,000
--Rent and Leases	\$0	\$0	\$140	\$0	(\$140)
--Maintenance and Repairs	\$10,000	\$1,685	\$1,685	\$0	\$8,315
--Services PlanUW	\$211,900	\$305	\$80,499	\$115,500	\$15,901
--Fellows and Scholars	\$26,748	\$0	\$0	\$0	\$26,748
--Consumable Supplies	\$125,187	\$4,081	\$18,373	\$10,453	\$96,361
--Miscellaneous	\$3,000	(\$1,321)	\$5,147	\$223	(\$2,369)
-Capital					
--Capital Equipment	\$0	\$0	\$0	\$10,746	(\$10,746)
-Aid to Individuals					
--[5712] Fellows&Scholars-Annual	\$0	\$12,000	\$32,000	\$0	(\$32,000)
--[OTHERAIDS] Other Aids PlanUW	\$460	\$0	\$0	\$0	\$460
Sales Credits					
--[SALESCRED] Sales Credits PlanUW	\$24,000	\$0	\$0	\$0	\$24,000
TOTAL	\$2,521,067	\$188,062	\$1,262,062	\$742,466	\$516,539

Capital and Supplies

As a department focused on lab-based teaching and research, BMS has considerable needs in for capital and supply expenditures.

Large expenses, including repair and replace (partial list)

	Cost	Fiscal year
Chemi Doc	\$ 27,546.40	2022
Autoclave (plus \$10K electric and plumbing costs)	\$ 45,446.00	2022
Refrigerated Centrifuge	\$ 5,600.00	2022
Laminar flow hood	\$ 10,746.19	2021
-80C Freezers	\$ 23,997.00	2017

Ice maker	\$ 4,050.00	2018
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This list does not include costly cold room repairs and autoclave rebuilds over time, which amount to more than the cost of a new machine, but the department lacked the capital to buy a new machine.

Yearly expenses for teaching labs

Yearly Lab Expenses

Expense	Cost	Fiscal year	FY sum expenses
Lab classroom supplies	\$ 34,854.13	2015	\$ 44,760.63
Repairs/maintenance	\$ 3,474.22	2015	
Equipment replacement/upgrade	\$ 6,432.28	2015	
Lab classroom supplies	\$ 30,891.75	2016	\$ 46,535.84
Repairs/maintenance	\$ 6,411.81	2016	
Equipment replacement/upgrade	\$ 9,232.28	2016	
Lab classroom supplies	\$ 37,817.54	2017	\$ 54,864.62
Repairs/maintenance	\$ 6,901.80	2017	
Equipment replacement/upgrade	\$ 10,145.28	2017	
Lab classroom supplies	\$ 43,865.39	2018	\$ 69,762.56
Repairs/maintenance	\$ 15,239.66	2018	
Equipment replacement/upgrade	\$ 10,657.51	2018	
Lab classroom supplies	\$ 34,301.92	2019	\$ 51,306.92
Repairs/maintenance	\$ 7,489.03	2019	
Equipment replacement/upgrade	\$ 9,515.97	2019	
Lab classroom supplies	\$ 19,706.58	2020	\$ 23,319.99
Repairs/maintenance	\$ 2,325.17	2020	
Equipment replacement/upgrade	\$ 1,288.24	2020	
Lab classroom supplies	\$ 24,663.19	2021	\$ 42,597.72
Repairs/maintenance	\$ 6,224.41	2021	
Equipment replacement/upgrade	\$ 11,710.12	2021	
Lab classroom supplies	\$ 19,745.13	2022	
Repairs/maintenance	\$ 7,337.60	2022	

Equipment replacement/upgrade \$ 81,737.74 2022 \$108,820.47

As a result of budget cuts, MLS courses in 2020 implemented lab fees for students, to cover the cost of consumable supplies (including some protective gear and expensive tests) that were previously supplied by the department. This is consistent with practices across campus.

Regular “unexpected” expenditures involved catastrophic equipment failure have reduced capacity for teaching lab experiments (especially the Mol Diagnostics/gel imager), and reduced teaching lab stocks, and biohazard disposal have negatively impacted education quality, as well as student/staff health and safety

During quarantine, costs have been significantly offset by university purchased PPE (gloves, paper towels, masks, cleaning supplies etc.). This will impact budget when these charges are placed back on the department

Expenses that appeared over budget were offset loss of professional development funds for faculty and IAS, which negatively impacts student education. A rainy-day fund ca. \$8-16K per year when available (often from DE funds) to help with the emergency purchases of equipment, but in current budget models, carryforwards and other dollars are swept away by the university.

2. List space and facilities requirements for the program and assess adequacy of current allocation.

Space & Facilities

Space is an ongoing challenge for the BMS Program, with particular deficiencies in laboratory and research space. Program increases in students, faculty, and staff have not been accompanied by relative increases in space/facilities. As such, the lack of space resources in conjunction with consistently high enrollment numbers in the undergraduate programs have led to overcrowding in laboratories. Increasing laboratory teaching sections has alleviated some of the spacing limitations but this has come without increasing staff and faculty resources.

Enderis Hall

The facilities for the instruction and training of the BMS students were constructed in 1985 and remodeled in 1996. The BMS facilities include three teaching laboratories: Enderis B70, B88, & B90. These classrooms are used for undergraduate and graduate laboratory instruction. Enderis B70 can accommodate 36 students; Enderis B90 can accommodate 28 students; Enderis B88 can accommodate approximately 16 students. These classrooms are used almost continuously throughout each day. They are lab classrooms, and while they accommodate this number of students, they are congested if full; mostly the department

avoids the problem by offering two sections of many lab courses, but in summer that is not possible, and people are a bit on top of each other.

The teaching laboratories are equipped with eye wash sinks, safety showers, fire extinguishers, fume hoods, biological safety cabinets, storage cabinets for flammable liquids, splash shields, biohazard waster control plans, and safety data sheets. The BMS Program complies with all OSHA regulations. The laboratory classrooms are generally adequate. They need repairs to cabinets and drawers, a low-cost one-time expense. However, they are filled with expensive equipment, all of which is ages at different rates. The department should have a budget of \$10-20,000 per year, replenished each year, to deal with emergencies. For example, last year the main autoclave became non-functional. This is not just a problem for teachers and researchers, it is a legal problem due to regulations about disposing of biological waste. Since departments are no longer allowed roll over funds, each year induces a panic about “what will we do if X breaks this year?”

In addition, there is a walk-in cold storage area, a dry storage area, and a room for dishwashing and sterilization, a specimen processing area, and one office for the laboratory manager in this area.

Enderis B72 is utilized as both a conference room for the BMS Program and a resource space for the BMS students. Current textbooks and journals are housed here for student use. Enderis B48, B49, and B73 house faculty research labs. Offices for faculty and instructional academic staff and the program assistants are located in Enderis Hall on the fourth floor.

Northwest Quadrant

Classrooms: The classroom that is used for classes is in the North-West Quadrant, Building B of the main UW-Milwaukee campus. It is conveniently located across the hallway from the faculty offices which enables faculty to bring learning resources into class and quickly access additional resources in their office or storage space. It is equipped as follows:

- Internet access
- Desktop computer and ceiling mounted projector.
- 2 large white boards affixed to the walls.
- Full size skeleton.
- Anatomical torso model.
- View boxes
- Tables and chairs that fold up and are equipped with wheels for easy reconfiguration of the classroom for active learning components.

Laboratories: The program has 5 rooms which are located on the ground floor of the North-West Quadrant Building A. They are conveniently located in the same building complex as the faculty offices and classrooms. The laboratories provide invaluable experience for the students for positioning labs and imaging principles labs. They are well equipped to support the achievement of the program mission. There are 2 energized

radiography lab rooms, a virtual reality radiography room, a mobile radiography unit, and a c-arm/mobile fluoroscopy unit and table for the students to practice surgical procedures.

Faculty Offices: located on the 6th floor of the North-West Quadrant Building B across the hallway from the classroom. The students have easy access to the faculty offices before, between, and after class. All faculty maintain an open-door policy to ensure they are always accessible to the students. Each faculty member has their own private office which is large enough for private student advisement.

The proximity of the classroom, laboratories, and faculty offices make it convenient for the students to access all the resources they need to be successful.

3. *List research and teaching equipment available for the program and assess adequacy.*

The BMS program maintains basic instrumentation for instructing students on the fundamentals of clinical diagnostic testing. The students are introduced to highly automated clinical instruments and laboratory information systems during their clinical rotations. The Program resources together with the clinical site resources, provide the students with the required laboratory training to become proficient entry level practitioners.

See: Appendix 2.C

List of the equipment housed in the teaching and research laboratories

4. *Describe procedure for recommending additions to the UWM Library holdings. Assess adequacy of library resources for students and faculty.*

The UWM library provides adequate services and resources to both students and faculty. A full description can be found at the following link: [Accessible Services and Resources - UWM Libraries](#)

Students and faculty are appreciative of the online subscriptions to various scientific and professional journals. New additions to the library collection can be requested through the library liaison of the department.

5. *List space and facilities being used for the undergraduate program off-campus and assess adequacy.*

The BMS Program utilizes clinical affiliate training sites for the undergraduate professional clinical education courses. The current clinical education training sites for each of the submajors are listed below.

Medical Laboratory Science

Aurora ACL Laboratories

Ascension Columbia St. Mary's Hospital Lab

Ascension All Saints Hospital
Ascension St. Francis Hospital
Children's Hospital of Wisconsin- Milwaukee
Fort Health Community Hospital
Froedtert Community Memorial Hospital
Froedtert West Bend Hospital
Froedtert South Hospital
UW Health System
Wisconsin Diagnostic Labs

Cytotechnology

UW-Madison State Hygiene Laboratory

Radiologic Technology

All Saints Hospital
Froedtert Hospital
University of Wisconsin- Hospital & Clinics
St Joseph's Hospital

Diagnostic Medical Sonography

Aurora Hospital
Froedtert Hospital
University of Wisconsin- Hospital & Clinics

Public Health Microbiology

City of Milwaukee – Health Department

All of these clinical affiliates provide excellent clinical training for the BMS students and exceed standards set forth by the accrediting agencies. In addition, all of these institutions are accredited by the Joint Commission on Accreditation of Health Care Organizations (JCAHO), the State of Wisconsin, and/or the College of American Pathologists (CAP). Lists of equipment used at each of the clinical training sites are available upon request.

The BMS Program assumes the responsibility for initiating cooperative agreements (ASSAs) with each clinical affiliate. The written agreement is signed by both parties, detailing responsibilities of the university and the affiliate for program administration, instruction, and supervision. This agreement is reviewed and renewed each year. Copies of the signed Program Memorandum Agreements with each clinical affiliate training site will be available upon request.

See: Appendix 2.D
UW-System Affiliation Agreements
Biomedical Sciences Program Memorandum Agreement – Master

6. *List research and teaching equipment being used for the undergraduate program off-campus and assess adequacy.*

No UWM equipment is being used off site.

7. *Describe technology support for online offerings and assess adequacy.*

The office of eLearning for the College of Health Sciences is housed within the Academic Initiatives and Planning unit. The personnel in the eLearning office facilitate instructor professional development through the UWM CETL and provide individual instructor support for Canvas course development and review, Canvas site management, identification and use of open education resources and instructional technology. eLearning personnel support department personnel through serving as a conduit for CETL information related to Canvas updates and concerns and instructional technology and design needs.

Instructional technology fees (formerly DE fees) are shared with departments and administrative units. Fee revenue supports the purchase of instructional technology. Examples of technology support include virtual study sets and tutorials (Medialab, Mediasite, blood cell review products, microbiology case studies, Skillitics (virtual reality radiologic technologist training), H5P licensing and video production technology. Classroom resources for department managed spaces are also supported through the office of eLearning and instructional technology fees.

The Biomedical Sciences Department features four instructors who are certified as online instructors through the CETL Online and Blended Teaching certificate program. These instructors serve as mentors to others in the department. Eight additional faculty/staff instructors have received course development stipends which require completion of the CETL online instructor professional development.

Personnel in CHS eLearning support Canvas site course development and maintenance and instructional design for the Flexible option programs in Biomedical Sciences (Diagnostic Imaging and Health Sciences degree completion)

C. Curriculum and Instruction

1. Identify the educational goals/outcomes of the program. Explain how educational goals/outcomes of the program prepare students for employment.

Program Goal

The goal of the Biomedical Sciences Program is to prepare competent Biomedical Scientists at the undergraduate and graduate level in the cognitive (knowledge), psychomotor (skills), and affective (behavior) learning domains.

Program Objectives

As part of our educational commitment to the student and with continuous quality improvement as our basis, the BMS Program is designed to:

1. Provide a program of instruction which will produce Biomedical Scientists capable of meeting the health care needs of the community and society.
2. Provide the necessary practical and didactic education which will enable the student to compete in the job market.
3. Prepare future Biomedical Scientists to work in a wide variety of settings by educating them in sound principles and techniques in all areas of their profession.
4. Provide the fundamental knowledge of disease processes which makes their health care specialty meaningful to their profession.
5. Provide practice in their professional skills so that the student develops confidence in their abilities.
6. Provide instruction, evaluation and counseling in order that the student can achieve the objectives as defined for their clinical practice.
7. Provide safety guidelines to be followed, including universal precautions, for the safe handling of specimens and body fluids, and the safety of the patient and other health care professionals.
8. Develop an understanding of professional ethics.
9. Develop the foundation for the student to advance on the career ladder and continue professional growth, if desired.
10. Provide an understanding that the patient is the primary focus of all we do.

The learning outcomes of students in BMS submajors match expectations from the workplace, as evidenced from several community-based feedback mechanisms. During clinical practice, students are actively participating in the day-to-day work at the clinical training site. Each student is supervised by the clinical site by the Clinical Program Director and/or Education Coordinator and clinical instructors. The Clinical Program directors provide the student and the BMS Program with feedback about their performance. The site supervisors also provide feedback related to how the BMS program has prepared the student.

These interactions among students, the BMS Program, and the community allow for the sharing of expectations among all involved. Students learn firsthand what is expected in the workplace through the clinical internship. The professional community shares with the student how the knowledge gained in the classroom corresponds to what is needed in the workplace post-graduation. Finally, the BMS Program stays informed about changes in expectations or practice in the field with feedback from the students, the clinical instructors, and clinical education coordinators. The BMS Program also has two Advisory Committees (Medical Laboratory Science Advisory Committee and the Diagnostic Imaging Advisory Committee) and hosts meetings each semester to obtain information from the clinical training sites and health care professionals who work with the students.

The BMS faculty also serve on the Advisory Committees at the various clinical training sites. In addition, employers of the graduates are surveyed for feedback.

See: Appendix 2.E, Employer Survey

2. *Explain the organization of courses, credits, and sequencing within the program.*

Courses in the undergraduate programs are sequenced for students to begin with the pre-professional courses and then progress into the professional courses. The pre-professional program includes the first two years of the undergraduate curriculum; these courses include the general education requirements and foundation courses which serve as pre-requisites to many of the advanced courses in the professional programs. The professional program is comprised of the upper division courses in each of the submajors where the curriculum is focused on professional application courses.

3. *Explain the organization of courses, credits, and sequencing within sub-majors.*

See: Appendix 2.F, Sequencing of courses for each submajor

4. *Describe how course content and activities help students meet course objectives.*

Course objectives which are provided in each course syllabi are aligned with the BMS Program educational goals and the national certification agencies educational standards. Students are exposed to a mixture of didactic and laboratory experiences (both on-campus and at clinical affiliates) that are designed for graduates to meet entry-level competencies outlined by accrediting and professional organizations.

5. *Describe the delivery modes used for the program and its courses. Describe how the program ensures that instructional quality is maintained across all modes of delivery.*

Undergraduate courses in the BMS Program are offered via a variety of delivery options. For many of the pre-professional courses, lecture is the primary mode of delivery. The professional courses include lectures and laboratory courses which provide hands-on experience and fieldwork courses which comprise experiential learning activities. Previously, lectures were offered mainly face-to-face only. Now many courses are offered hybrid or entirely online. Due to the pandemic, even more courses have online capabilities. All courses are carried out on respective Canvas course websites. The variety of delivery options has allowed students to learn in different ways and also allows our courses to reach a variety of student populations. Student evaluations and assessment of program outcomes either by WEAVE or accreditation, are used to ensure instructional quality is maintained across all modes of delivery.

6. *Discuss any changes made in curriculum and instruction since the last APCC review.*

Cytotechnology Accreditation Change

At the time during the previous review, UWM's Cytotechnology Program was an accredited program (CAAHEP) where Aurora ACL Laboratories served as the lone clinical affiliate. In 2013, Aurora informed UWM that they could no longer accept cytotechnology students for their training. Consequentially, an affiliation agreement was established with University of Wisconsin-Madison's 12-month clinical practicum program. This 12-month program was already CAAHEP accredited, therefore UWM voluntarily withdrew our CAAHEP accreditation. Overall content and course topic/credit did not change for

students, but the overall structure changed to a 3+1 program. Students complete 3 years of undergraduate coursework at UWM and then apply to UW-Madison's accredited program for their 4th year. Student's then graduate from UW-Milwaukee and obtain a certificate from UW-Madison in the process.

BMS Submajor Curriculum Changes

Since last review, the BMS submajor has went through several curriculum changes. Initially, curriculum was modified to remove MLS specific coursework and add selected courses targeted to pre-professional programming and targeted career outcomes. In summary, required clinical coursework during the summer of their senior year was removed, and the required number of credits to graduate was reduced from 129 to 120. Most recently, 2 new required courses (BMS 517 and 518) have been created which expose BMS submajor students to research methodology and techniques. These new courses along with the associated program change are currently going through the governed approval process. Overall, these changes enable BMS submajors the time to prepare for professional studies and also expand on their laboratory expertise to work in a variety of settings.

Health Sciences Submajor

In the 2019, a new submajor, Health Sciences submajor was approved. This degree serves students who have completed credits as pre-majors or majors in health-related programs and are in good academic standing, but not admitted to a major based or unable to complete the degree due to major specific requirements or clinical education capacity constraints. The program requires students to have completed of at least 30 credits as intended CHS students. The curriculum is flexible and is comprised of courses that already exist within CHS. For students to graduate they need to complete 120 credits, the last 30 of which are from UWM. In addition to meeting the GER requirements, 27 credits of lower division CHS courses and 27 credits of upper division CHS courses are required. As noted above, the intent of this submajor was to improve retention and overall student experience. It is not intended to recruit new freshmen or draw from other potential majors. It is targeted for students who have completed substantial coursework and intended to leave UWM altogether.

Nutrition

The Nutritional Sciences major and minor, jointly offered by the Departments of Biomedical Sciences and Kinesiology in the College of Health Sciences (CHS), was approved in 2012. The program is overseen by a Program Director and the BSNS Program Committee which is comprised of faculty and academic staff from both departments who teach in the program, and the department chairs from both units. With the implementation of this program, the certificate program was discontinued. This program is under a separate APCC review.

Bloodbank Certificate

In 2017, the Certificate in Bloodbanking/Immunohematology was approved. This program was initiated to help address the workforce shortage within southeastern Wisconsin. This

certificate provides a structured program in blood banking that is equivalent to the curriculum required for blood banking in the existing Medical Laboratory Scientist (MLS) Program. Students completing the certificate program would be able to sit for the American Society of Clinical Pathology Board of Certification (ASCP-BOC) Technologist/Scientist in Blood Bank national certification exam and be employable in a medical laboratory or blood center.

Radiologic Technology

During the previous review, the Radiologic Technology (RT) program was a 2+2 program where students completed their first 2 years on-campus and then their last 2 years of professional training at a clinical affiliate. Since last APCC review, the Radiologic Technology program has been fully accredited by the Joint Review Committee on Education in Radiologic Technology (JRCERT). Most recently the program was awarded 8 years accreditation status by JRCERT in 2018. Now students have the option of applying after their second year to the UWM-sponsored program, where they complete their 3rd year on-campus and then spend the final year of professional training at a clinical affiliate. Students, not accepted into UWM-sponsored program, are still able to apply to clinical affiliate accredited programs where they complete their 3rd and 4th year of professional training at the affiliated accredited program similar to years previously.

Sonography

During the previous review, the Sonography Program was a 2+2 program where students completed their first 2 years on-campus and then their last 2 years of professional training at a clinical affiliate. The program has since been accredited by Commission on Accreditation of Allied Health Education Programs (CAAHEP). In 2020 CAAHEP awarded the Sonography program 5 years of continuing accreditation. However, in 2021, the program director accepted a position at Froedtert Hospital's Sonography Program. Consequentially our department decided to withdraw our CAAHEP accreditation and revert back to the 2+2 format, which is similar to the structure at the time of the previous review.

Flexible Option Completion Programs

Starting in 2019, the BMS department began sponsoring FLEX online completion degrees. Completion degrees are targeted to credentialed health professionals admitted into the Diagnostic Imaging program must hold imaging certification in addition to their Associates Degree upon entering the program. Students admitted into the Health Sciences program are just required to have their Associates Degree or 60 transferrable credits upon entering. Both degree programs are available in an online or Flex competency-based delivery mode. This allows individuals to continue to work while obtaining their Bachelors degree, and also allows the program to be targeted to a national audience.

D. Assessment and Evaluation

1. Summarize the assessment plan used to evaluate the extent to which students are meeting program learning outcomes and how the program is engaged in a coherent process of continuous curricular and program evaluation/improvement.

Assessment plans for the undergraduate major and submajors in Biomedical Sciences are based on certification exam outcomes for accredited programs and clinical programs . S Specific program outcomes related to accreditation standards. Non accredited sub majors are assessed within the major and do not have unique assessment plans. Assessment, including certification exam performance are reviewed annually by the program faculty and related advisory boards

The BMS-MS assessment plan was developed and is overseen by the graduate faculty.

2. Report how assessment data trends are used to improve or modify program.

Examples of improvements based on previous assessment cycles include the addition of an introductory course in Diagnostic Imaging and review of summative exams related to didactic areas in the MLS professional curriculum. detailed outcomes and measures available)

Improvements generated from previous assessment cycles include improved use of rubrics for thesis defense and reduction in pass/fail course options. (Detailed outcomes and measures are available)

3. If the program leads to licensure or certification, provide success rates of graduates in obtaining licensure or certification.

UWM MLS Program Outcomes						
		2020	2019	2018	2017	2016
# of Graduates		33	27	28	25	22
Graduation Rate		97%	96%	100%	93%	100%
Job Placement Rate (within 6 months of graduation for graduates seeking employment)		100%	100%	96%	100%	100%
Certification Rate		97%	88%	84%	83%	95%

UWM RT Program Outcomes						
		2020	2019	2018	2017	2016
# of Graduates		33	42	24	33	28

Graduation Rate		93%	83%	100%	92%	100%
Job Placement Rate (within 6 months of graduation for graduates seeking employment)		100%	100%	100%	100%	100%
Registry Pass Rate on 1 st Attempt		85%	90%	92%	100%	78%
Registry Pass Rate after Multiple Attempts		93%	90%	92%	100%	89%

E. Contribution to General Education

Discuss the contributions made by the program to UWM General Education Requirements. Include a summary of assessment of general education learning outcomes supported by the program's courses. Discuss the changes/improvements made to general education courses offered by the program.

The following BMS courses have been approved to meet general education requirements (GER)

- BMS 201 - Sexually Transmitted Diseases & Aids (NS)
- BMS 205 - Introduction to Diagnostic Medicine (NS)
- BMS 232 - Introduction to Nutrition (NS)
- BMS 245 - Client Diversity in Health Sciences: An Interdisciplinary Perspective (SS)
- BMS 260 - Introduction to Complementary & Alternative Medicine (SS)

General education courses in the BMS program are taught by full time departmental faculty/instructional academic staff or by part-time ad hoc instructors. BMS 245 is a cross-listed course that is team-taught with other faculty and staff in the College of Health Sciences. Graduate teaching assistants are assigned based on enrollment. Integration of instructional media and Canvas have enabled instructors to include active learning activities and assessments in keeping with General Education program learning goals. All of the BMS GER courses currently have online modality options. The on-line format has enhanced these courses offering a variety of resources and activities that the students participate in.

Section 4: Faculty

A. Faculty Composition

Discuss the composition of the faculty with respect to representation of faculty/instructional academic staff from traditionally underrepresented groups in the field and the balance of tenured and tenure-track faculty, and instructional academic staff. Use the trend data to describe changes in program faculty, including additions, non-retentions, retirements, resignations, etc., that have occurred over the past 7 years.

The last ten years have seen a substantial number of faculty and staff leave, for a variety of reasons. While seven tenure-track faculty have left, there has been only one hire in that time frame. On the staff side, things have been more stable, with hires evenly balancing departures.

Name/Rank	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Change
Azenabor, A Professor	1	2	3	4	5	6	17	8	9	20	21	Terminated
Burlage, R. Associate Professor	1											Resigned
Doll, J. Associate Professor	1	2	3	4	5	6	7	8	9	10	11	
Eells, J. Professor	1	2	3	4	5	6	7	8	9	10	11	
Hassan, W. Assistant Professor	1						17					Non-Renewed
Lyons, J.A. Associate Professor	1	2	3	4	5	6	7	8	9	10	11	Resigned
Mitchell, C. Associate Professor	1	2	3	4	5	6	7	8	9	10	11	Resigned
Nardelli, D. Associate Professor	1	2	3	4	5	6	7	8	9	10	11	
Ndon, J. Associate Professor	1	2	3	4	5	6	7	8	9	10	11	Retired
Skwor, T. Assistant Professor								8	9	10	11	
Smith, C. Associate Professor	1											Resigned
Anders, S. Academic Staff	1	2	3	4	5	6	7	8	9	10	11	
Brown, C. Academic Staff	1	2	3	4	5	6	7	8	9	10	11	Retired
Cordas, D. Academic Staff				4	5	6	7	8	9	10	11	

C. Faculty/staff workload

Complete the attached faculty/staff workload table. Describe the role of part-time instructional staff not included in the table. Describe other program-related duties of faculty and staff including academic and professional advising, program coordination, etc.

Summary of Faculty workload in Biomedical Sciences

	Courses taught in a typical AY	Teaching focus	Research focus	Activity Distribution (% of effort devoted to each area)			% of time to the program
				Teaching	Research/scholarship	Admin/Service	
Doll, J	2	Molecular Biology	Prostate cancer – molecular & cellular biology	25%	25%		50%
Eells, J	6			60%	20%	20%	100%
Nardelli, D	4	Immunology, microbiology	Lyme disease	40%	40%	20%	100%
Skwor, T	4	medical and public health microbiology	Bacteria; antibiotic resistance; photodynamic inactivation	40%	40%	20%	100%
Anders, S	8	MLS		100%			100%
Cordas, D	8	Radiologic imaging		100%			100%
De Oliveira, L	4	Nutrition		90%		10%	50%
De Pons, B	6	MLS		80%		20%	100%
Hirshfeld, M	6	Radiologic imaging		80%		20%	100%
Hou, S	8	Hematology		100%			100%
Liedhegner, E	3	Molecular diagnostics/pathophysiology	Molecular signaling mechanisms in disease pathogenesis.	30%	30%	40%	100%
Lunak, Z	4	MLS		50%		50%	100%
Stalewski, S	4	MLS		80%		20%	25%
Wisniewski, J	6	Radiologic imaging		80%		20%	100%

Currently, there are no part-time faculty or instructional staff in the BMS Program. The clinical liaisons that are involved in teaching and supervising the students at the clinical training sites are offered clinical faculty appointments with the university. In addition to the program directors (listed in Section 3A.2), the MLS and RT programs have clinical coordinators to help advise and place students for clinical rotations. The current clinical

coordinators are Brad DePons (MLS Clinical Coordinator) and Madge Hirschfield (RT Clinical Coordinator)

Adjunct faculty are used in the undergraduate program to cover teaching workload when current faculty/staff are unable to do so (e.g., grant buyout, administrative appointment, sabbatical leave, resignation, retirement, etc.) or to deliver coursework for which the adjunct instructor has specific expertise.

Sue Johnson, M.S, MLS (ASCP)	Immunohematology (BMS 529)
Richard Silberman, MD	Human Pathophysiology (BMS 301-305)
Caitlin Cahak, MLS (ASCP)	Parasitology and Mycology Lab (BMS 537)
Barbara Wesson, PhD	Complementary/Integrative Health (BMS260)
	Teamwork in Health Professions (BMS 433)
	Professional Development (BMS 434)
Kavita Poddar, PhD	Introduction to Nutrition (BMS 232)
Kristine Alaniz, MPH	Sexually Transmitted Diseases (BMS 201)

Section 5: Students

A. Student Numbers and Composition

*Discuss the enrollment trends in the program and related sub-majors (certificates, minors).
Discuss the enrollment of students from underrepresented groups in the field and the program's efforts to increase the number of students from underrepresented groups.*

Below is a table of enrollment numbers for our BMS submajors provided by the CHS Factbook. Enrollment over the last 7 years within the BMS program has remained strong. From 2015 to 2019, the BMS program experienced slight decreases in enrollment which were consistent across both CHS and campus. Enrollment numbers the last couple of years have started to trend upwards. This is largely due to the implementation of the Health Sciences (HS) submajor. This submajor serves students who have completed credits as pre-majors or majors in health-related programs and are in good academic standing, but were not admitted to a major based or unable to complete the degree due to major specific requirements or clinical education capacity constraints. This has greatly helped the retention of students who would otherwise be leaving the university.

Career	Major or Area of Concentration/Submajor	Fall 2011	Fall 2012	Fall 2013	Fall 2014	Fall 2015	Fall 2016	Fall 2017	Fall 2018	Fall 2019	Fall 2020	Fall 2021
TOTAL		2028	2037	2119	2143	2155	2088	1994	1912	1752	1707	1809
BMS	Total	574	618	650	670	694	619	596	581	560	596	628
	Biomedical Sciences	558	602	635	651	683	609	584	569	550	578	610
	<i>No Subplan</i>	50	86	77	34	31	6	15	7	10	11	13
	<i>Biomedical Sciences</i>	67	65	63	100	99	77	78	80	84	71	84
	<i>Cytotechnology</i>	10	12	9	12	7	6	6	3	3	4	7
	<i>Diagnostic Imaging Completion</i>	0	4	13	5	7	5	7	1	3	1	2
	<i>Diagnostic Medical Sonography</i>	121	147	164	123	121	107	95	93	81	87	98
	<i>Diagnostic Medical Sonography-Echo</i>	0	0	0	8	7	9	8	11	7	5	8
	<i>Diagnostic Medical Sonography-Gen</i>	0	0	0	35	38	28	19	19	19	18	22
	<i>Health Sciences</i>	0	0	0	0	0	0	0	0	28	85	99
	<i>Health Sciences Completion</i>	0	0	0	0	0	0	0	2	1	2	5
	<i>Medical Laboratory Sciences</i>	87	101	123	148	189	207	190)	165	155	126
	<i>Public Health Microbiology</i>	12	11	16	15	17	16	16	10	9	10	13
	<i>Radiologic Technology</i>	211	176	170	171	167	148	150	151	140	129	133
	Clinical Laboratory Sciences-Special	0	0	0	3	0	0	0	0	0	0	0
	Biomedical Sciences MS	16	16	15	16	11	10	12	12	10	18	18

In an effort to reach underrepresented students, many of the didactic courses have an online option. Specifically, the completion degree programs for Diagnostic Imaging and Health Sciences can be completed entirely online, which allow these programs to reach a variety of student populations.

B. Student Success

1. *Discuss the retention, persistence, and graduation rates of students in the program and how these measures have evolved over the past seven years. Discuss plans to improve in those areas.*

Below are student enrollment, diversity, graduation and retention reports for BMS programs and DMI programs. Enrollment numbers have remained steady the last seven years, however the number of graduates has increased and hit an all-time high in 2020. This is largely due to the flexibility of the coursework (offering online and on-campus sections) and also the development of new flexible programs (e.g., HS degree).

Program initiatives to improve retention, persistence and graduation rates include the following:

- Addition of online sections to meet student time needs and competing priorities
- Addition of an introductory course in the Diagnostic Imaging disciplines with the goal of preparing students for their degree path and ultimate career expectations
- Enhancement of the BMS:BMS submajor with the goal of maximizing flexibility and return on investment for the student. Current work includes evaluation of options for an accelerated BS-MS and concentration pathways leading to careers in genetic counselling and research coordination.

An off-ramp degree in health sciences was established in 2019. The purpose of this degree is to provide a BS degree option for students who have accumulated credits but are unlikely to complete their original degree plan and are at risk for leaving the university without a

credential. This degree is open to any enrolled student at UWM. In 2019 and 2020, 38 students from BMS enrolled in this major. These students had an average of 90 accumulated credits.

In the nearly two years since launch, 141 students have declared the BS in HS degree program. Of these 141 students, 87 (61.7%) were female, 13 (9.2%) were from targeted populations, and 20 (14.2%) were first generation. The program awarded 39 degrees. These degree recipients were mostly female (N = 29; 74.4%) and included 13 (33.3%) from targeted populations and 20 (51.3%) were first generation. The mean GPA at graduation was 2.99 (SD = 0.32).

BMS		2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	
Undergraduate	Student Enrollment Diversity, Retention and Graduation	33	25	28	63	46	55	71	47	52	62	47	35	
	New Freshmen	11	9	10	40	33	9	12	4	9	1	2	3	
	No Submajor	11	13	12	9	6	28	31	22	25	34	29	14	
	BMS	6	1	5	10	6	15	21	14	16	25	14	16	
	MLS	3	1	0	0	0	1	3	0	0	0	1	2	
	Cyto	2	1	1	4	1	2	4	7	2	2	1	0	
	PHM	24	16	24	26	34	27	23	16	12	13	16	10	
	New Transfer	12	4	14	15	12	8	8	0	0	1	1	1	
	No Submajor	8	3	5	5	5	7	3	6	7	2	4	2	
	BMS	2	7	5	4	14	9	9	10	3	10	8	4	
	MLS	0	0	0	0	0	2	0	0	1	0	1	0	
	Cyto	2	2	0	2	3	1	3	0	1	0	0	0	
	PHM	217	219	226	275	288	309	343	312	305	292	300	338	
	Total Enrollment	No Submajor	58	52	50	86	77	34	31	6	15	7	10	11
	BMS	47	55	67	65	63	100	99	77	78	80	84	71	
	MLS	87	91	87	101	123	148	189	207	190	192	165	155	
	Cyto	14	7	10	12	9	12	7	6	6	3	3	4	
	Health Sciences Completion	0	0	0	0	0	0	0	0	0	0	1	2	
	Health Sciences	0	0	0	0	0	0	0	0	0	0	28	85	
	PHM	11	14	12	11	16	15	17	16	16	10	9	10	
	Total Enrollment Targeted*	No Submajor Targeted*							88	77	89	88	89	105
	BMS Targeted*								4	1	4	4	4	6
	MLS Targeted*								36	26	20	24	20	17
	Cyto Targeted*								43	45	59	57	52	44
	Health Sciences Completion Targeted*								1	1	2	1	1	0
	Health Sciences Targeted*								0	0	0	0	0	0
	PHM Targeted*								0	0	0	0	10	37
	Degrees Granted Total								4	4	4	2	2	1
	BMS	28	29	35	35	34	30	33	38	34	42	61		
	MLS	3	7	8	9	3	7	10	11	5	8	7		
Cyto	20	20	23	21	28	19	22	25	28	27	33			
Health Sciences Completion	0	0	0	0	0	0	0	0	0	1	1			
Health Sciences	0	0	0	0	0	0	0	0	0	0	18			
PHM	2	0	2	2	1	3	1	2	1	5	2			
New Freshmen One Year Retention Rate	67.1	71.2	74.4	69.3	67.4	69.4	73.9	82.4	75.2	68				
New Freshmen Two Year Retention Rate	53.2	60.3	67.1	63.4	59.8	55	69.4	70.3	67					
New Freshmen Three Year Retention Rate	48.1	52.1	59.8	57.4	54.3	55	55.9	62.2						
4th Year Graduated Rate	8.9	8.2	17.1	10.9	15.2	9	17.1							
6th Year Graduated Rate	35.2	32.9	43.9	45.5	39.1									
DMI		2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	
Undergraduate	Student Enrollment Diversity, Retention and Graduation	32	35	45	28	35	39	35	20	44	33	26	24	
	New Freshmen	14	11	22	20	21	20	23	10	23	24	15	16	
	DMS	18	24	23	8	14	19	12	10	21	9	11	8	
	New Transfer	19	27	26	40	39	28	22	20	23	29	23	20	
	DMS	5	13	11	22	22	16	10	12	12	12	17	12	
	RT	14	14	15	17	16	12	12	8	10	17	6	8	
	Imaging Completion				1	1	0	0	0	1	0	0	0	
	Total Enrollment	349	350	332	327	347	342	340	297	279	275	250	240	
	DMS	99	106	121	147	164	166	166	144	122	123	107	110	
	RT	250	244	211	176	170	171	167	148	150	151	140	129	
	Imaging Completion				4	13	5	7	5	7	1	3	1	
	Total Enrollment Targeted*								87	87	74	70	59	
	DMS Targeted*								42	45	32	26	29	
	RT Targeted*								45	42	41	44	41	
	Imaging Completion Targeted*								0	0	1	0	0	
	Degrees Granted Total	38	46	55	52	54	37	49	47	46	50	53		
	Cardiac/Vascular	0	0	0	0	0	5	6	2	5	1	7		
	Diagnostic Medical Sonography	2	7	11	15	12	0	0	0	0	0	0		
	Imaging Completion	0	0	0	0	3	1	3	1	5	0	0		
	General/Vascular	0	0	0	0	2	7	12	11	12	7	13		
Radiologic Technology	36	39	44	37	37	24	28	33	24	42	33			
New Freshmen One Year Retention Rate														
New Freshmen Two Year Retention Rate														
New Freshmen Three Year Retention Rate														
4th Year Graduated Rate														
6th Year Graduated Rate														

2. Describe the efforts to identify and eliminate achievement gaps of students in the program.

The BMS:HS degree, outlined in the previous section represents an initiative that services at risk populations. Other course initiatives include a Freshman Seminar, enrolling most new freshmen in the CHS, and a probation recovery class which supports retention for second semester freshmen who are in a probation status. Both of these courses are collaboratively taught with student affairs and academic affairs personnel.

Students in BMS programs complete large numbers of credits outside of the programs in CHS. Data analysis for introductory courses and overall program persistence suggest that an intervention targeted toward male students (mentoring, student org, other evidence-based practices) could be useful and should be investigated. Perhaps targeted contacts/mentorship from upper division students could be useful.

Students from targeted populations tended to have lower grades in specific BMS introductory courses and did not continue into the BMS laboratory programs as compared to those from non-targeted populations. Further investigation into potential reasons for these differences would be warranted.

Clear information and guided pathways supporting career outcomes could impact the loss of students from the freshman year and of students who appear to be exploring (L&S majors). This might be an opportunity to attract some of these students into the programs.

3. Evaluate the department's strengths and weaknesses as they relate to student support services, including academic advising, career services, professional development, and experiential learning opportunities.

Advising

Students in the BMS Program are provided with many opportunities for advisement and assistance. Within the College of Health Sciences there is a Student Services office with one academic advisor, Bill Mueller dedicated to the BMS undergraduate majors. This advisor communicates and meets regularly with the Undergraduate Program Directors to review student progress, curricular issues, and student advisement.

Bill Mueller ensures that students are kept on track academically, encouraging students to meet with him at least once each semester. The BMS undergraduate program directors works closely with Bill to monitor advising practices and keep him informed of curricular and programmatic changes. The BMS program directors and coordinators also provide guidance to students and offer open advising/walk-in advising to students as needed.

In addition to face-to-face contact, information regarding program policies and procedures is available via other sources (e.g., BMS and CHS websites, program brochures, catalogs, student handbooks, policy manuals). E-mails and other updates are regularly provided to

students in an effort to keep them apprised of schedule deadlines, anticipated program changes, and other relevant information.

Professional Development, Career Services and Experiential Learning

Each BMS submajor offers a Professional Development course where students are encouraged to join their professional organizations, develop a résumé and cover letter, practice interview skills and discuss job-search strategies, attend professional society meetings where they prepare and present posters on relevant professional topics. These courses are often taken during their spring semester of their senior year. During the senior year, students also often begin the interview process for job placements prior to graduation. Many students are offered job opportunities prior to graduation.

Experiential learning opportunities occur within laboratory sessions on-campus and during their internships at clinical affiliates. In addition, students are also encouraged to participate in undergraduate research within the department. Several BMS students have completed UWM's Support for Undergraduate Research Fellowship (SURF) program.

Section 6: Plans for Future

Describe actions that the department/program plans to take including changes in instructional resources and practices, curricula and assessment of student learning.

Near Term Goals

Follow submajor graduates for jobs and success: As far as possible find out what the career paths look like for students who don't choose the MLS or DMI certifications, and use this information for recruitment and student success

Improve the number of students who enter graduate education: Both for the BMS MS program and for professional school (like medical school)

Develop a five-year degree plan for the BS/MS degrees in BMS, which can be an important recruiting tool

Develop courses and certificates or concentrations lost to BMS (CHPS) due to school/college reorganization. The BMS:HS degree, in particular, requires courses to be taken within the College of Health Sciences.

Explore a genetic counseling certificate, in cooperation with campus partners.

Finalize an MLT-MLS bridge bachelor's degree (Route 2 certification option). Currently there is no efficient way for student with a Lab Technology degree from MATC to get a BS in Medical Laboratory Science from UWM, and we are developing a structure for making this possible in about two years of coursework.

Expand the use of instructional simulation through consolidating VR lab for Radiography (currently insufficient funds to guarantee technology will keep working) and team with other programs as part of the Simulation Center in Cunningham.

Goals Possible with New FTE

Develop micro credentials and advanced credential for practitioners in the field, in tandem with UWM efforts to develop these across campus

Expand Competency Based Education (CBE) formats for online programs. CBE, which allows students to work at their own pace and avoids didactic pedagogies, is very popular with older, fully employed students. BMS is the academic home for degree completion programs in Diagnostic Imaging and Health Sciences.

Increase enrollment in the Radiologic Technology program by adding courses in magnetic resonance imaging and computerized tomography, which could result in 6-8 more students

Implement courses in Advanced Diagnostic Medical Imaging, specifically to all students to become registered computerized tomography professionals.

Assemble an MLS certificate for Biology majors, which would build on their knowledge base and potentially make them employable in a laboratory setting.

The College of Health Professions and Sciences (CHPS)

As part of UWM's project to consolidate health-related studies in just two units, BMS will move (as of 7/2023) to CHPS. In the move, the department will be the School of Biomedical Sciences, a non-departmentalized unit that contains exactly the staff and programs of the BMS Department. No location changes are planned as part of this change, so there will likely be little or no impact on this program.