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

Institution Submitting Proposal	Howard Community College

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 ◉ Check | Payment Amount: $250.00 | Date Submitted: 1/31/20

Department Proposing Program	Health Sciences/Diagnostic Medical Sonography	
Degree Level and Degree Type	Associate of Applied Science	
Title of Proposed Program	Diagnostic Medical Sonography	
Total Number of Credits	70	
Suggested Codes	HEGIS: 520702.00	CIP: 510910.0000
Program Modality	◉ On-campus ○ Distance Education (*fully online*)	
Program Resources	◉ Using Existing Resources ○ Requiring New Resources	
Projected Implementation Date	◉ Fall ○ Spring ○ Summer Year: 2020	
Provide Link to Most Recent Academic Catalog	URL: http://howardcc.smartcatalogiq.com/en/2019-2020/Catalog	
Preferred Contact for this Proposal	Name: Melinda Moore on behalf of Jean Svacina	
	Title: Manager, Curriculum Services	
	Phone: (443) 518-4734	
	Email: mmoore2@howardcc.edu	
President/Chief Executive	Type Name: Kathleen Hetherington, Ed.D.	
	Signature: Kathleen Hetherington Date: 1/30/20	
	Date of Approval/Endorsement by Governing Board:	

Revised 3/2019

HOWARD COMMUNITY COLLEGE
You Can Get There From Here.

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January 29, 2020

Dr. James D. Fielder, Jr.
Secretary of Higher Education
Maryland Higher Education Commission
6 North Liberty Street, 10th Floor
Baltimore, MD 21201

Dear Dr. Fielder:

Howard Community College (HCC) requests your approval of a substantial change to the existing associate of applied science (AAS) degree in Diagnostic Medical Sonography (DMS).

HCC reviewed its DMS program to prepare for an upcoming accreditation site visit from the Joint Review Committee on Education in Diagnostic Medical Sonography (JRCDMS). The proposed changes are the result of that comprehensive program review. The changes will facilitate better alignment with the JRCDMS standards, and will reflect current technology and practices, thereby better serving HCC's DMS students.

Please contact me if you need additional information or clarification.

Sincerely,

Jean Svacina

Dr. Jean Svacina
Vice President of Academic Affairs
JSvacina@howardcc.edu
443-518-1850

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.

Howard Community College's (HCC) associate of applied science (AAS) degree in Diagnostic Medical Sonography (DMS) is designed to prepare students to be entry-level general, vascular, or cardiac sonographers. Students are prepared to pass credentialing exams on the first attempt and to gain employment in health care facilities after, or just prior to, graduation. The foundational knowledge, skills, and academic credit gained by students will facilitate successful employment and/or transfer to four-year institutions.

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

HCC's mission is "Providing pathways to success." The primary function of the DMS program is to prepare students to contribute to the community in the form of high quality health care, and to become competent sonographers who infuse ethics and cultural diversity knowledge into their daily tasks at health care facilities. This program also prepares students who want to transfer to four-year universities or colleges with a goal of continuing their education in health sciences as leaders in the field. In addition to sonography skills, emphasis will be placed on the development of creative and critical thinking skills, ethical reasoning, scientific and quantitative reasoning, global competency, written communication skills, and information and technological literacy.

3. Provide a brief narrative of how the proposed program will be adequately funded for at least the first five years of program implementation. (Additional related information is required in section L).

Adequate funding for support of the DMS program in terms of facilities, faculty, and administrative support is already in place, as this program currently exists and is comprised of coursework that is already offered and funded.

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

   a) ongoing administrative, financial, and technical support of the proposed program
   b) continuation of the program for a period of time sufficient to allow enrolled students to complete the program.

Administrative, financial, and technical support of this program is already in place and will not need to change. Support will continue to be provided by HCC's offices of Admissions and Advising; Records, Registration, and Veterans Affairs; Completion Services; Academic Support Services; and the health sciences division.

If HCC decides to discontinue the DMS program in the future, the college will establish a teach-out plan, and students will be able to complete the program during a set teach-out period. HCC will support students throughout the completion of the program.

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

1. Demonstrate demand and need for the program in terms of meeting present and future needs of the region and the State in general based on one or more of the following:

    a) The need for the advancement and evolution of knowledge

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

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

Due to accreditation standard changes by the Joint Review Committee on Education in Diagnostic Medical Sonography (JRC-DMS), the program's curriculum requires updates. The revisions are required in order for content to be up-to-date with current medical and technological standards implemented in the field of Sonography. The medical field is rapidly changing and periodic updates to health sciences programs are needed.

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

The DMS AAS degree supports the Maryland State Plan for Postsecondary Education Goal 1: Access by providing students access to the first 60 credits of a four-year degree at a fraction of the cost. As an open access institution, HCC provides access to postsecondary education irrespective of academic preparation. In addition, students who transfer with an associate degree demonstrate an increased likelihood to complete a four-year degree. The program also supports Goal 2: Success by providing significant support services to aid students in completing their degrees.

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

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

Career paths available to Diagnostic Medical Sonography AAS degree holders include a range of careers in health care, government, and academia.

2. Present data and analysis projecting market demand and the availability of openings in a job market to be served by the new program.
3. Discuss and provide evidence of market surveys that clearly provide quantifiable and reliable data on the educational and training needs and the anticipated number of vacancies expected over the next 5 years.
4. Provide data showing the current and projected supply of prospective graduates.

This program is intended to prepare students to serve the community by obtaining entry-level positions as cardiac, vascular, or general sonographers in the health care field.

In 2018 and 2019, 14 students graduated from HCC's DMS program each year. Currently, the program has a total of 14 students enrolled, with a cohort of 16 anticipated in 2020. HCC anticipates that its full current cohort of second-year students will graduate in May of 2020.

D. Reasonableness of Program Duplication:

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

HCC serves a distinct geographical area (mainly Howard County residents, but also residents of surrounding areas in the Baltimore/Washington region). While Montgomery College offers a Diagnostic Medical Sonography program, the small cohort size for these programs justifies the continuation of HCC's program, as it provides accessibility for residents of the geographical region.

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

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

The DMS program will have no impact on the implementation or maintenance of high-demand programs at HBIs.

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

1. Discuss the program's potential impact on the uniqueness and institutional identities and missions of HBIs.

The DMS program will have no impact on the uniqueness and institutional identities and missions of HBIs.

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

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

The DMS program was originally established due to an identified need in the community. The proposed changes to the program were identified as necessary due to changes to accreditation standards. The DMS program chair will oversee the program, and will ensure the curriculum and program policies meet the needs of accreditation, college requirements, and the medical field. A major component of the proposed change is separating the lab and didactic components for each current course to improve evaluation of students and techniques of content facilitation. Each course's description and objectives were updated to meet accreditation requirements and to be current with standards in the medical field.

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

The learning outcomes for this program are (these are determined by the program's accreditor):

1. To prepare competent entry-level general sonographers in the cognitive (knowledge), psychomotor (skills), and affective (behavior) learning domains.
2. To prepare competent entry-level adult cardiac sonographers in the cognitive (knowledge), psychomotor (skills), and affective (behavior) learning domains.
3. To prepare competent entry-level vascular technologists in the cognitive (knowledge), psychomotor (skills), and affective (behavior) learning domains.

A graduate should be able to:

1. Identify and demonstrate the legal and ethical aspects and responsibilities of the sonographer.
2. Prepare the patient for the sonographic examinations based upon the appropriate specialty.
3. Demonstrate proper instrumentation of ultrasound equipment and proper scanning techniques and protocols of human body organs.
4. Demonstrate preparation for the ARDMS Registry examination of the area of study.
5. Demonstrate how sonographic instruments work.
6. Identify anatomical structures in the different sectional planes and compare the changes due to the pathology to normal anatomy.

3. Explain how the institution will:

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

   b) document student achievement of learning outcomes in the program

Program and course reviews are completed according to the schedule provided by HCC in collaboration with faculty members, department chairs, academic deans, the division of eLearning, and the office of learning outcomes assessment (LOA). Artifacts for the objectives and assessment are collected and shared through HCC's learning management system, Canvas. Course and program reviews are completed with support from the LOA office. Once an assessment is completed, an action plan will address findings as part of the outcomes assessment process.

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

Students in the DMS program will be required to fulfill Code of Maryland (COMAR) general education requirements and to complete a significant number of credits in courses in diagnostic medical sonography.

Course Descriptions

DMSU 101 Introduction to Sonography (2 credits)
This course introduces the diagnostic foundations of diagnostic medical sonography, including medical terminology; scan plane orientations; anatomical relationships; departmental administrative

operations; hospital organization; HIPAA regulations; blood and fluid precautions; and basic patient care principles.

DMSU 112 Sectional Anatomy for Imaging Professionals (3 credits)
This course will require students to study sectional anatomy of the body in the transverse, longitudinal, and coronal planes. Emphasis will be placed on the vessels and organs imaged sonographically. There will also be correlation of the anatomy to sonographic images, CAT, MRI, and X-Ray images.

DMSU 130 Abdomen Ultrasound (3 credits)
This course gives students a comprehensive understanding of the embryology, anatomy, physiology, and pathological processes of the abdominal region. Specific attention is paid to the liver, pancreas, gallbladder, abdominal vascular, biliary systems, spleen, body cavities, urinary systems, abdominal wall, and male pelvis.

DMSU 131 Abdomen Ultrasound Lab (1 credit)
This laboratory course applies technical ultrasonic skills to the topics and concepts covered in the Abdomen Ultrasound course. Students will be introduced to ultrasound knobology and scanning protocols of the abdominal and male pelvis regions.

DMSU 132 Pediatrics and Small Parts Ultrasound (2 credits)
This course focuses on the embryology, anatomy, physiology, and pathology of the neck, thyroid, breast, scrotum, musculoskeletal, pediatric hip and abdomen, and neonatal brain and spine. Students will be taught protocols and how to distinguish between normal and abnormal sonographic appearances. Patient history, symptoms, clinical laboratory tests, and other diagnostic procedures will be incorporated.

DMSU 133 Pediatrics and Small Parts Lab (1 credit)
This laboratory course applies technical ultrasonic skills to the topics and concepts covered in Pediatrics and Small Parts Ultrasound. Students will learn ultrasound knobology and scanning protocols of pediatric and small part imaging.

DMSU 140 Ultrasound OB/GYN I (2 credits)
This course gives students a comprehensive understanding of normal pelvic anatomy, physiology, embryology, and pathological processes. First trimester normal and abnormal anatomy, physiology, and embryology will also be facilitated.

DMSU 141 Ultrasound OB/GYN I Lab (1 credit)
This laboratory course applies technical ultrasonic skills to the topics and concepts covered in the Ultrasound OB/GYN I course. Students will build on previous ultrasound knobology knowledge while learning to produce sonograms adhering to protocols of gynecology and first trimester obstetrics.

DMSU 142 Ultrasound OB/GYN II (3 credits)
This course facilitates normal and abnormal anatomy throughout the second and third trimesters of pregnancy. Fetal growth/development, abnormalities, high-risk pregnancies, and maternal disease will be taught in depth along with correlations to the sonographic examinations.

DMSU 143 Ultrasound OB/GYN II Lab (1 credit)
This laboratory course applies technical ultrasonic skills to the topics and concepts covered in the Ultrasound OB/GYN II course. Students will build on previous ultrasound knobology knowledge to produce/evaluate sonograms adhering to protocols of the second/third trimester obstetrics, incorporating as low as reasonably achievable (ALARA) standards.

DMSU 182 Ultrasound Vascular I (3 credits)
This course focuses on the carotid, peripheral vascular, abdominal, arterial, and venous Doppler ultrasound exams. The principles of the vascular physical examination, proper instrumentation for each type of ultrasound, as well as anatomy, pathology, hemodynamics, patient history, clinical manifestations, non-invasive techniques, pathology, and interpretation will be discussed.

DMSU 183 Ultrasound Vascular I Lab (1 credit)
In this course, students will focus on learning proper scan techniques, vascular measurement, and spectral Doppler applications in the lab. This course includes vascular assessment techniques, physics, anatomy and physiology review, and an introduction to the theoretical and practical principles of two-dimensional vascular examination of the veins and arteries of the human body. This laboratory course applies technical ultrasonic skills to the topics and concepts covered in the Ultrasound Vascular I course.

DMSU 200 General Registry Review (2 credits)
This course provides a review of the general concentration didactic and clinical knowledge obtained in the program. Case studies will be reviewed to test the student's diagnostic skill in identifying a wide range of abnormalities. Students will be exposed to test taking skills with multiple mock registry exams to prepare for the Abdomen and OB/GYN boards through the American Registry for Diagnostic Medical Sonography (ARDMS).

DMSU 201 Vascular Sonography Introduction (2 credits)
This course facilitates vascular physical principles and instrumentation, peripheral vascular, arterial, and carotid scans. Anatomy, hemodynamics, patient history, clinical manifestations, non-invasive techniques, interpretation, and pathophysiology will be discussed. This course is required to complete the general or cardiac concentration of the Diagnostic Medical Sonography program.

DMSU 202 Vascular Sonography Introduction Lab (1 credit)
This laboratory course reinforces what students have learned in the Vascular Sonography Introduction lecture course. The hands-on facilitation will enable students to build on previous ultrasound knobology knowledge pertaining to vascular scanning. Students will produce vascular sonograms.

DMSU 203 ECG for Cardiac Sonographers (3 credits)
The purpose of this course is to prepare students to recognize and interpret the various features of the electrocardiogram (ECG). Emphasis is placed on ECG patterns and components, cardiac conduction and regulation, normal values of ECG components, SA nodal, AV nodal and ventricular arrhythmias, and disorders of the cardiac conduction system. Practical application of ECG theory incorporated with arrhythmia detection will prepare students to recognize abnormal conduction patterns of patients in various clinical settings.

DMSU 204 Echocardiography I (3 credits)
In this course, students will focus on normal anatomy, scan techniques, cardiac measurement, new dynamics, pathology, and case-study presentations. This course includes the cardiovascular assessment techniques (TTE & TEE), physics and ultrasound review, and an introduction to the theoretical and practical principles of basic M-mode exam and two-dimensional echocardiography examination of the adult heart.

DMSU 205 Echocardiography I Lab (1 credit)
In this course, students will focus on learning proper scan techniques, cardiac measurement, and spectral Doppler applications in the lab. This course includes the cardiovascular assessment techniques (TTE & TEE), physics, anatomy and physiology review, and an introduction to the theoretical and

practical principles of basic M-mode exam and two-dimensional echocardiography examination of the adult heart. This laboratory course applies technical ultrasonic skills to the topics and concepts covered in Echocardiography I.

DMSU 206 Echocardiography II (3 credits)
In this course, students will focus on abnormal anatomy, cardiac measurement, new dynamics, and case-study presentations. This course includes the cardiovascular assessment techniques for both trans-thoracic and transesophageal echocardiography. There will be focused concentration toward measurement utilization of M-mode, pulsed and continuous wave Doppler as well as color Doppler applications in the two-dimensional echocardiography examination of the adult heart.

DMSU 207 Echocardiography II Lab (1 credit)
In this course, students will focus on learning proper scan techniques, cardiac measurement, and spectral Doppler applications in the lab. There will be focused concentration toward advanced measurement utilization of M-mode, Pulsed and Continuous Wave Doppler as well as Color Doppler applications in the two-dimensional echocardiography examination of the adult heart. This laboratory course applies and expands upon the technical ultrasonic skills to the topics and concepts covered in the Echocardiography I.

DMSU 208 Cardiac Registry Review (2 credits)
This course provides a review of the cardiac concentration didactic and clinical knowledge obtained in the program. Case studies will be reviewed to test the student's diagnostic skill in identifying a wide range of abnormalities. Students will be exposed to test taking skills with multiple mock registry exams to prepare for the cardiac boards through the American Registry for Diagnostic Medical Sonography (ARDMS).

DMSU 211 Ultrasound Physics and Instrumentation I (3 credits)
This course explains how the pulse-echo principle is used in sonography. Basic sound and ultrasound physics are covered, including frequency, wavelength, propagation speed, reflection, and resolution. The components and function of the ultrasound transducer and equipment are explored.

DMSU 212 Ultrasound Physics and Instrumentation II (3 credits)
In this course, lectures and related exercises cover the areas of ultrasonic propagation principles, imaging artifacts, and spectral and color-flow Doppler. Content will also include the interactive properties of ultrasound with human tissue, possible biologic effects, types of equipment and instrumentation, and safety and quality control.

DMSU 251 Clinical Practicum I (1 credit)
This course integrates didactic and clinical coursework at the beginner level to develop students' ultrasonic skills in patient care environments such as campus laboratories, private offices, hospital rotations, and/or outpatient radiology centers. Sonography experience depends on the specialty track in which the student is enrolled

DMSU 252 Clinical Sonography II (2 credits)
This course is designed to develop and improve upon students' independent ultrasonic skills in a diagnostic environment and may include scanning in campus laboratories, private offices, hospital rotations, and outpatient radiology centers. Sonography experience depends on the specialty track in which the student is enrolled.

DMSU 254 Clinical Sonography IV (1 credit)
This course will continue the development and improvement of students' independent ultrasonic skills in a diagnostic environment and may include scanning in campus laboratories, private offices, hospital rotations, and outpatient radiology centers. Students are encouraged to present cases to the interpreting physician. Attendance at an assigned clinical affiliate for 40 hours per week during the winter intersession period is required. Sonography experience depends on the specialty track in which the student is enrolled.

DMSU 256 Clinical Practicum III (3 credits)
This course is designed to develop and improve upon students' independent ultrasonic skills in a diagnostic environment and may include scanning in campus laboratories, private offices, hospital rotations, and outpatient radiology centers. Sonography experience depends on the specialty track in which the student is enrolled.

DMSU 257 Clinical Practicum V (4 credits)
This course is designed to increase students' confidence, competency, and timing of their ultrasonic skills in a diagnostic environment that may include scanning in campus laboratories, private offices, hospital rotations, and outpatient radiology centers. Sonography experience depends on the specialty track in which the student is enrolled.

DMSU 283 Physiologic Testing for Vascular Sonographers (3 credits)
This course will illustrate how to apply the appropriate algorithms for testing the arterial and venous systems of the peripheries. Students will learn the importance of proper physiologic assessment techniques, indications, and contraindications. Students will also focus on correlating the physiologic technique to venous insufficiency testing. The principles of the vascular physical examination, proper instrumentation for each type of physiological test, as well as anatomy, hemodynamics, patient history, clinical manifestations, non-invasive techniques, and interpretation will be discussed.

DMSU 284 Ultrasound Vascular II (3 credits)
This course will focus on furthering students' knowledge of advanced vascular anatomy to include the abdominal and peripheral vascular, arterial, and venous systems. The principles of the vascular physical examination, proper instrumentation for each type of ultrasound, as well as anatomy, pathology, hemodynamics, patient history, clinical manifestations, non-invasive techniques, and interpretation will be discussed.

DMSU 285 Ultrasound Vascular II Lab (1 credit).
In this course, students will continue to focus on learning proper scan techniques, vascular measurement, and spectral Doppler applications in the lab while incorporating advanced methods. This course expands upon vascular assessment techniques by adding in transcranial Doppler and abdominal cavity interrogation. This laboratory course applies advanced technical ultrasonic skills to the topics and concepts covered in the Ultrasound Vascular I course.

DMUS 286 Vascular Registry Review (2 credits)
This course provides a review of the vascular concentration didactic and clinical knowledge obtained in the program. Case studies will be reviewed to test the student’s diagnostic skill in identifying a wide range of abnormalities. Students will be exposed to test taking skills with multiple mock registry exams to prepare for the vascular boards through the American Registry for Diagnostic Medical Sonography (ARDMS).

DMSU 287 Introduction to Abdominal and Cardiac Sonography (2 credits)
In this course, students will focus on normal anatomy, scan techniques, measurement, new dynamics, and case-study presentations for general and cardiac sonography. This course includes the cardiovascular assessment techniques (TTE & TEE), physics review, abdominal vascular sonography, and an introduction to the theoretical and practical principles of basic M-mode exam, and two-dimensional echocardiography examination of the adult heart.

DMSU 288 Introduction to Abdominal and Cardiac Sonography Lab (1 credit)
In this course, students will learn the proper scan techniques, measurement, and spectral Doppler applications involved in cardiac and abdominal vasculature sonography. This includes the assessment techniques for transthoracic echocardiograms, physics, anatomy and physiology review, and an introduction to how to accurately perform the basic principles of motion mode, two-dimensional, and spectral Doppler examinations of the adult heart and abdominal vasculature. This laboratory course applies technical ultrasonic skills to the topics and concepts covered in the Introduction to Abdominal and Cardiac Sonography course.

Diagnostic Medical Sonography – A.A.S. Degree (Career)

The diagnostic medical sonography degree prepares graduates for entry-level positions in the field of general, vascular, and cardiac sonography in hospitals, medical and specialty offices, imaging centers, clinics, and other health care agencies. This full-time, two-year associate of applied science degree is designed to teach students the skills necessary to perform routine, emergency, and interventional sonography procedures. This area of study is rigorous in both the number of clinical internship hours and academic standards required. Prospective students are required to have a strong background in anatomy and physiology, mathematics, and health-related studies. Didactic courses may be offered in either online or hybrid class formats, and students will need to be familiar with the distance learning environment. The laboratory portion of the courses will be offered in labs on campus. Clinical experiences will be conducted at facilities within or around the Howard County area. Second-year students and graduates may be eligible to apply for either the American Registry for Diagnostic Medical Sonography (ARDMS), the American Registry of Radiologic Technologists (ARRT), or the Cardiovascular Credentialing International (CCI) certification examinations.

General Track		
General Education Core		
Course Number	**Title**	**Credits**
	English Composition	
ENGL 121	College Composition	3
	Arts & Humanities – Oral Communication	
SPCH 101 OR SPCH 105 OR SPCH 110	Introduction to Human Communication OR Fundamentals of Public Speaking OR Interpersonal Communication	3
	Social & Behavioral Sciences – Critical & Creative Thinking	
PSYC 101	General Psychology	3
	Mathematics – Quantitative Reasoning	
MATH 138	Statistics	4
	Biological & Physical Sciences – Scientific Reasoning w/ Lab	
BIOL 101 BIOL 203	General Biology Anatomy and Physiology I	4 4

	Total General Education Credits	**21**

Additional Program Requirements		
Course Number	**Title**	**Credits**
BIOL 204	Anatomy and Physiology II	4
DMSU 101	Introduction to Sonography	2
DMSU 112	Sectional Anatomy for Imaging Professionals	3
DMSU 130	Abdomen Ultrasound	3
DMSU 131	Abdomen Ultrasound Lab	1
DMSU 132	Pediatric and Small Parts Ultrasound	2
DMSU 133	Pediatric and Small Parts Ultrasound Lab	1
DMSU 140	Ultrasound OB/GYN I	2
DMSU 141	Ultrasound OB/GYN I Lab	1
DMSU 142	Ultrasound OB/GYN II	3
DMSU 143	Ultrasound OB/GYN II Lab	1
DMSU 200	General Registry Review	2
DMSU 201	Vascular Sonography Introduction	2
DMSU 202	Vascular Sonography Introduction Lab	1
DMSU 211	Ultrasound Physics and Instrumentation I	3
DMSU 212	Ultrasound Physics and Instrumentation II	3
DMSU 251	Clinical Practicum I	1
DMSU 252	Clinical Sonography II	2
DMSU 254	Clinical Sonography IV	1
DMSU 256	Clinical Practicum III	3
DMSU 257	Clinical Practicum V	4
PHYS 101	Technical Physical Science	4
	Total Program-Specific Credits	**49**

	Total Credits	**70**

Vascular Track		
General Education Core		
Course Number	**Title**	**Credits**
	English Composition	
ENGL 121	College Composition	3
	Arts & Humanities – Oral Communication	
SPCH 101 OR SPCH 105 OR SPCH 110	Introduction to Human Communication OR Fundamentals of Public Speaking OR Interpersonal Communication	3
	Social & Behavioral Sciences – Critical & Creative Thinking	
PSYC 101	General Psychology	3
	Mathematics – Quantitative Reasoning	
MATH 138	Statistics	4
	Biological & Physical Sciences – Scientific Reasoning w/ Lab	
BIOL 101	General Biology	4
BIOL 203	Anatomy and Physiology I	4
	Total General Education Credits	**21**

Additional Program Requirements		
Course Number	**Title**	**Credits**

BIOL 204	Anatomy and Physiology II	4
DMSU 101	Introduction to Sonography	2
DMSU 112	Sectional Anatomy for Imaging Professionals	3
DMSU 182	Ultrasound Vascular I	3
DMSU 183	Ultrasound Vascular I Lab	1
DMSU 211	Ultrasound Physics and Instrumentation I	3
DMSU 212	Ultrasound Physics and Instrumentation II	3
DMSU 251	Clinical Practicum I	1
DMSU 252	Clinical Sonography II	2
DMSU 254	Clinical Sonography IV	1
DMSU 256	Clinical Practicum III	3
DMSU 257	Clinical Practicum V	4
DMSU 283	Physiological Testing for the Vascular Sonographer	3
DMSU 284	Ultrasound Vascular II	3
DMSU 285	Ultrasound Vascular II Lab	1
DMSU 286	Vascular Registry Review	2
DMSU 287	Introduction to Abdominal and Cardiac Sonography	2
DMSU 288	Introduction to Abdominal and Cardiac Sonography Lab	1
PHYS 101	Technical Physical Science	4
	Total Program-Specific Credits	**46**

Total Credits	**67**

Cardiac Track

General Education Core

Course Number	Title	Credits
	English Composition	
ENGL 121	College Composition	3
	Arts & Humanities – Oral Communication	
SPCH 101 OR SPCH 105 OR SPCH 110	Introduction to Human Communication OR Fundamentals of Public Speaking OR Interpersonal Communication	3
	Social & Behavioral Sciences – Critical & Creative Thinking	
PSYC 101	General Psychology	3
	Mathematics – Quantitative Reasoning	
MATH 138	Statistics	4
	Biological & Physical Sciences – Scientific Reasoning w/ Lab	
BIOL 101	General Biology	4
BIOL 203	Anatomy and Physiology I	4
	Total General Education Credits	**21**

Additional Program Requirements

Course Number	Title	Credits
BIOL 204	Anatomy and Physiology II	4
DMSU 101	Introduction to Sonography	2
DMSU 112	Sectional Anatomy for Imaging Professionals	3
DMSU 201	Vascular Sonography Introduction	2
DMSU 202	Vascular Sonography Introduction Lab	1
DMSU 203	ECG for Cardiac Sonographers	3
DMSU 204	Echocardiography I	3

DMSU 205	Echocardiography I Lab	1
DMSU 206	Echocardiography II	3
DMSU 207	Echocardiography II Lab	1
DMSU 208	Cardiac Registry Review	2
DMSU 211	Ultrasound Physics and Instrumentation I	3
DMSU 212	Ultrasound Physics and Instrumentation II	3
DMSU 251	Clinical Practicum I	1
DMSU 252	Clinical Sonography II	2
DMSU 254	Clinical Sonography IV	1
DMSU 256	Clinical Practicum III	3
DMSU 257	Clinical Practicum V	4
PHYS 101	Technical Physical Science	4
	Total Program-Specific Credits	**46**

Total Credits	**67**

Admission to this program is based upon successful completion of BIOL 101, BIOL 203 and 204, PHYS 101, and MATH 138. Anatomy and Physiology courses must be completed within five (5) years prior to admission to the first sonography course. BIOL 101 and PHYS 101 must be completed within ten (10) years prior to clinical admission. A grade of "C" or better is required in diagnostic medical sonography and general education courses. Prerequisite courses required for the DMS program are ENGL 121, BIOL 101, BIOL 203, BIOL 204, MATH 138 and PHYS 101. A grade of 3.0 or higher is required for BIOL 203, BIOL 204, and PHYS 101. An overall GPA of 2.5 or higher is required from prerequisites.

A course grade of "C" (75%) or greater in all DMS program didactic courses is required for progression in the program. A course grade of "B" (85%) or greater in all DMS program clinical courses is required for progression in the program. Failure to meet this requirement will result in withdrawal from the DMS program and will require re-admission to the program the following academic year.

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

Students at HCC meet general education requirements by completing a minimum of 18 credits of approved courses that meet the Code of Maryland (COMAR) regulations, and which include the following goals:

- Critical and Creative Thinking
- English Composition
- Oral Communication
- Quantitative Reasoning
- Scientific Reasoning

In addition to the goals above, students will also have goals integrated into general education and program-specific courses, including goals in ethics, global competency, information literacy, and technological literacy.

Students will be required to conduct coursework determined by faculty and approved by the general education subcommittee. Once assessment is complete, an action plan will address findings as part of the ongoing general education assessment process.

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

All accreditation requirements are attached to this proposal (see Appendix A). The documents have been retrieved from the JRC-DMS accreditation website (https://www.jrcdms.org/index.htm).

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

All clinical affiliation agreements are attached to this proposal (see Appendix B).

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.

HCC will provide students with timely and accurate information on all curriculum requirements, course offering methodology, Canvas, academic support services, financial aid services, and policies regarding costs and payment by making the information easily accessible to students on HCC's website, in the college catalog, schedules of classes, and admissions and orientation materials.

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.

All advertising, recruiting, and admissions materials will be clear and accurate in the representation of the program requirements and services available to students.

H. Adequacy of Articulation

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

There are no current articulation agreements for the DMS program with other institutions. However, HCC is working to establish articulations with Frostburg University, George Washington University, Goucher College, Notre Dame University, Stevenson University, and Towson University.

I. Adequacy of Faculty Resources (as outlined in COMAR 13B.02.03.11).

1. Provide a brief narrative demonstrating the quality of program faculty. Include a summary list of faculty with appointment type, terminal degree title and field, academic title/rank, status (full-time, part-time, adjunct) and the course(s) each faulty member will teach (in this program).

Name	Title	Status	Courses/Areas Taught
Dr. Sepideh Abdollahzadeh, DHSc, RDMS	Program Chair	Full-time	Ultrasound Physics, Introduction to Sonography, Sectional Anatomy for Imaging

			Professionals, clinical courses, and overseeing the program
Chante D. Robertson, MAED, RVS, RCS	Assistant Professor	Full-time	Vascular sonography, Cardiac Sonography, Ultrasound Physics
Beth Hendler-Friedman, BS, RVT	Clinical Coordinator	Full-time	Vascular lab courses, Vascular Registry Review course, clinical courses
Brittany Macer, AA, AA	DMS Adjunct Instructor	Part-time	Assists in cardiac lab courses
Raminder Singh, BA, RDMS	DMS Adjunct Instructor	Part-time	Teaches general track lecture and lab courses

Additional instruction will be done by adjunct faculty experienced in teaching DMS courses.

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

   a) Pedagogy that meets the needs of the students

   b) The learning management system

   c) Evidenced-based best practices for distance education, if distance education is offered.

HCC provides continuous teaching improvement and ongoing training for full- and part-time faculty year-round in distance education, the learning management system (Canvas), and other pedagogical-related topics, with concentrated training available during professional development periods in May, August, and January, which always include sessions on learner-specific needs and universal design.

J. Adequacy of Library Resources (as outlined in COMAR 13B.02.03.12).

1. Describe the library resources available and/or the measures to be taken to ensure resources are adequate to support the proposed program. **If the program is to be implemented within existing institutional resources**, include a supportive statement by the President for library resources to meet the program's needs.

The James Clark, Jr. Library offers a wide array of print and online resources that are adequate for the proposed program. From the library's website, individuals can search the online catalog for approximately 68,000 items, including books, e-books, and audiovisual titles. Library resources may be used or borrowed by current HCC students, faculty, and staff using their HCC ID card.

The library also provides access to e-journals through online database subscriptions. Off-campus access to databases, e-journals, e-books, and online course reserves is available to the college community via a current HCC login and password.

Research assistance is available at the library service desk, by appointment, and via email. Classes and online learning objects for information literacy instruction are regularly offered. Open seven days a week in the fall and spring semesters, the library is outfitted with group study rooms, quiet zones, silent areas, and seating areas for comfortable reading. Computers are available for research and writing and there is wireless connection and power outlets for mobile devices.

Program faculty may recommend materials for the library collection. First priority will be given to those materials that support the instructional program. Orders for previewing of high-cost video and multimedia items may be arranged through the library. Specialized materials not available in the library and not appropriate for purchase for the College's collection may be requested by faculty through interlibrary loan.

HCC's president affirms that the college's existing library resources will meet the needs of the proposed Diagnostic Medical Sonography AAS program.

K. Adequacy of Physical Facilities, Infrastructure and Instructional Equipment (as outlined in COMAR 13B.02.03.13)

1. Provide an assurance that physical facilities, infrastructure and instruction equipment are adequate to initiate the program, particularly as related to spaces for classrooms, staff and faculty offices, and laboratories for studies in the technologies and sciences. If the program is to be implemented within existing institutional resources, include a supportive statement by the President for adequate equipment and facilities to meet the program's needs.

Physical facilities, infrastructure, and instructional equipment already exist and are adequate to fulfill the needs of students pursuing the DMS AAS degree. The college president affirms that the existing resources are adequate to meet the needs of this program.

2. Provide assurance and any appropriate evidence that the institution will ensure students enrolled in and faculty teaching in distance education will have adequate access to:

   a) An institutional electronic mailing system, and

   b) A learning management system that provides the necessary technological support for distance education

All students who register for a credit course at HCC receive an HCC student email account.

HCC's office of student computer support (SCS) provides Canvas and Google Apps training and support for HCC students at locations on campus, in classrooms, and online. Technology workshops and "Ask an Expert" sessions are held at various hours and locations each semester.

Students can access Canvas through HCC's website. Canvas is the learning management system through which course information and content is provided to students in online and hybrid courses, and faculty communicate supplemental course material to students in face-to-face classes.

L. Adequacy of Financial Resources with Documentation (as outlined in COMAR 13B.02.03.14)

1. Complete **Table 1: Resources and Narrative Rationale**. Provide finance data for the first five years of program implementation. Enter figures into each cell and provide a total for each year. Also provide a narrative rationale for each resource category. If resources have been or will be reallocated to support the proposed program, briefly discuss the sources of those funds.

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 below)	$183,648	$183,648	$183,648	$235,200	$235,200
a. Number of F/T Students	32	32	32	40	40
b. Annual Tuition/Fee Rate	$5,739	$5,739	$5,739	$5,880	$5,880
c. Total F/T Revenue (a x b)	$183,648	$183,648	$183,648	$235,200	$235,200
d. Number of P/T Students	0	0	0	0	0
e. Credit Hour Rate	$140	$140	$140	$142	$142
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)	$183,648	$183,648	$183,648	$235,200	$235,200

2.a. The current maximum student cohort size for the DMS program is 16. Because two cohorts run simultaneously (first-year students and second-year students), the total number of students in the program is 32. HCC hopes to increase the number of available seats in the future. Years four and five show a projected increased cohort size of 20.
2.b. The projected tuition and fee revenue is based on current annual enrollment and includes a minor per-credit increase projected in years four and five.
2.e. $140-142 per credit + ~18.8% consolidated fee x 35 credits per year = Annual Tuition/Fee Rate
3-4. There are no anticipated grant or contract funds, nor any other anticipated sources of funding.

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

TABLE 2: PROGRAM EXPENDITURES

Expenditure Categories	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
1. Faculty (b + c below)	$261,238	$266,463	$271,792	$277,228	$282,773
a. Number of FTE	3	3	3	3	3
b. Total Salary	$226,238	$229,463	$232,792	$237,228	$242,773
c. Total Benefits	$35,000	$37,000	$39,000	$40,000	$40,000
2. Admin. Staff (b + c below)	0	0	0	0	0
a. Number of FTE	0	0	0	0	0
b. Total Salary	0	0	0	0	0
c. Total Benefits	0	0	0	0	0
3. Support Staff (b + c below)	0	0	0	0	0
a. Number of FTE	0	0	0	0	0
b. Total Salary	0	0	0	0	0
c. Total Benefits	0	0	0	0	0
4. Technical Support and Equipment	$15,000	$16,000	$17,000	$18,000	$20,000
5. Library	0	0	0	0	0
6. New or Renovated Space	0	0	0	0	0
7. Other Expenses	0	0	0	0	0
TOTAL (Add 1 – 7)	$276,238	$282,463	$288,792	$295,228	$302,773

1. HCC will use existing resources to continue this program, including the existing full-time faculty.
2-3. Administrative and support staff for this program are provided by the Health Sciences division.
4. Equipment purchases, support, and maintenance are included in this figure.
5-7. No other additional expenses are anticipated.

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

1. Discuss procedures for evaluating courses, faculty and student learning outcomes.
2. Explain how the institution will evaluate the proposed program's educational effectiveness, including assessments of student learning outcomes, student retention, student and faculty satisfaction, and cost-effectiveness.

The DMS program will be part of the ongoing assessment process HCC has in place. Courses are assessed on an ongoing basis. Programs are assessed as a whole every five years. Faculty are evaluated on an annual basis, as part of HCC's routine process.

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

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

Howard Community College values diversity and recognizes the critical role of an educational institution in preparing its students, faculty, and staff to become contributing members of the global community. HCC's Diversity Committee promotes conversation, exchange, and an increased awareness of diversity issues affecting the college community. HCC acknowledges that diversity is recognizing, appreciating, respecting, listening to, and learning from the unique talents and contributions of all people.

Faculty and staff of HCC are committed to the success of each student. HCC values and has clear policies on diversity, which are followed by all employees. Employees are required to complete online training modules focused on FERPA rights and responsibilities, harassment awareness and avoidance, safety, and emergency operations, and the College Vision, Mission, Values, Beliefs, and Strategic Initiatives. Refresher training models are required at intervals determined by HCC's president's team.

HCC recognizes the importance of addressing the issue of minority student achievement, as evidenced by our Silas Craft Collegians (SCC) program, Ambiciones program, and Howard P.R.I.D.E. program. The SCC program focuses on recent high school graduates whose academic achievement does not reflect their true potential. The program attempts to close this gap by maximizing academic achievement, retention, graduation, and transfer. The Ambiciones program builds community among Hispanic/Latino students by providing networking opportunities, educational and recreational activities, and workshops with other Hispanic/Latino students and campus organizations. In addition, students can receive specialized guidance with campus services such as advising and financial aid. Howard P.R.I.D.E. encourages the continued academic, professional, and personal development of black and minority male students via tutoring, mentoring, service learning, leadership seminars, and individual academic advising and career plans.

O. Relationship to Low Productivity Programs Identified by the Commission:

1. If the proposed program is directly related to an identified low productivity program, discuss how the fiscal resources (including faculty, administration, library resources and general operating expenses) may be redistributed to this program.

The DMS program is not related to an identified low productivity program.

P. Adequacy of Distance Education Programs (as outlined in COMAR 13B.02.03.22)

1. Provide affirmation and any appropriate evidence that the institution is eligible to provide Distance Education.

The DMS program is not being proposed as a distance education program.

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

Not applicable.

Howard Community College Diagnostic Medical Sonography Program

Appendix A

Curriculum Change Chart

General Track			
OLD Program Requirements	**Credits**	**NEW Program Requirements**	**Credits**
BIOL 101 General Biology	4	BIOL 101 General Biology	4
BIOL 203 Anatomy and Physiology I	4	BIOL 203 Anatomy and Physiology I	4
BIOL 204 Anatomy and Physiology II	4	BIOL 204 Anatomy and Physiology II	4
MATH 141 College Algebra	3	MATH 138 Statistics	4
PHYS 101 Technical Physical Science	4	PHYS 101 Technical Physical Science	4
ENGL 121 College Composition	3	ENGL 121 College Composition	3
SPCH 110 Interpersonal Communication	3	SPCH 101 Introduction to Human Communication OR SPCH 105 Fundamentals of Public Speaking OR SPCH 110 Interpersonal Communication	3
PSYC 101 General Psychology	3	PSYC 101 General Psychology	3
DMSU 102 Introduction to Ultrasound (lab/lec)	3	DMSU 101 Introduction to Sonography (lec)	2
DMSU 112 Sectional Anatomy for Imaging Professionals (lec)	3	DMSU 112 Sectional Anatomy for Imaging Professionals (lab/lec)	3
DMSU 171 Abdominal and Small Parts Ultrasound 1 (lab/lec)	2	DMSU 130 Abdomen Ultrasound (lec) DMSU 131 Abdomen Ultrasound Lab	3 1
DMSU 271 Abdominal and Small Parts Ultrasound II (lab/lec)	2	DMSU 132 Pediatrics and Small Parts Ultrasound (lec) DMSU 133 Pediatrics and Small Parts Ultrasound Lab	2 1
DMSU 172 Obstetrics/Gynecology Ultrasound I (lab/lec)	2	DMSU 140 Ultrasound OB/GYN I (lec) DMSU 141 Ultrasound OB/GYN I Lab	2 1
DMSU 272 Obstetrics/Gynecology Ultrasound II (lab/lec)	2	DMSU 142 Ultrasound OB/GYN II (lec) DMSU 143 Ultrasound OB/GYN II Lab	3 1
DMSU 213 Pathophysiology for Imaging Professionals (lec)	3		
DMSU 261 ARDMS Registry Seminar (lec)	1	DMSU 200 General Registry Review (lec)	2
DMSU 280 Introduction to Vascular Ultrasound (lab/lec)	3	DMSU 201 Vascular Sonography Introduction (lec) DMSU 202 Vascular Sonography Introduction Lab	2 1
DMSU 211 Ultrasound Physics and Instrumentation I (lab/lec)	3	DMSU 211 Ultrasound Physics and Instrumentation I (lec)	3
DMSU 212 Ultrasound Physics and Instrumentation II (lab/lec)	3	DMSU 212 Ultrasound Physics and Instrumentation II (lec)	3
DMSU 151 Clinical Sonography I	2	DMSU 251 Clinical Practicum I	1
DMSU 252 Clinical Sonography II	2	DMSU 252 Clinical Sonography II	2
DMSU 253 Clinical Sonography III	4	DMSU 256 Clinical Practicum III	3
DMSU 254 Clinical Sonography IV	1	DMSU 254 Clinical Sonography IV	1
DMSU 255 Clinical Sonography V	6	DMSU 257 Clinical Practicum V	4
Total OLD Program Requirements	70	**Total NEW Program Requirements**	70

Vascular Track			
OLD Program Requirements	**Credits**	**NEW Program Requirements**	**Credits**
BIOL 101 General Biology	4	BIOL 101 General Biology	4
BIOL 203 Anatomy and Physiology I	4	BIOL 203 Anatomy and Physiology I	4
BIOL 204 Anatomy and Physiology II	4	BIOL 204 Anatomy and Physiology II	4
MATH 141 College Algebra	3	MATH 138 Statistics	4
PHYS 101 Technical Physical Science	4	PHYS 101 Technical Physical Science	4
ENGL 121 College Composition	3	ENGL 121 College Composition	3
SPCH 110 Interpersonal Communication	3	SPCH 101 Introduction to Human Communication OR SPCH 105 Fundamentals of Public Speaking OR SPCH 110 Interpersonal Communication	3
PSYC 101 General Psychology	3	PSYC 101 General Psychology	3
DMSU 102 Introduction to Ultrasound (lab/lec)	3	DMSU 101 Introduction to Sonography (lec)	2
DMSU 112 Sectional Anatomy for Imaging Professionals (lec)	3	DMSU 112 Sectional Anatomy for Imaging Professionals (lab/lec)	3
DMSU 181 Vascular Ultrasound I (lab/lec)	3	DMSU 182 Ultrasound Vascular I (lec) DMSU 183 Ultrasound Vascular I Lab	3 1
DMSU 211 Ultrasound Physics and Instrumentation I (lab/lec)	3	DMSU 211 Ultrasound Physics and Instrumentation I (lec)	3
DMSU 212 Ultrasound Physics and Instrumentation II (lab/lec)	3	DMSU 212 Ultrasound Physics and Instrumentation II (lec)	3
DMSU 151 Clinical Sonography I	2	DMSU 251 Clinical Practicum I	1
DMSU 252 Clinical Sonography II	2	DMSU 252 Clinical Sonography II	2
DMSU 253 Clinical Sonography III	4	DMSU 256 Clinical Practicum III	3
DMSU 254 Clinical Sonography IV	1	DMSU 254 Clinical Sonography IV	1
DMSU 255 Clinical Sonography V	6	DMSU 257 Clinical Practicum V	4
DMSU 213 Pathophysiology for Imaging Professionals (lec)	3		
CARD 120 Rhythm Analysis and 12-lead EKG (lab/lec)	2	DMSU 283 Physiologic Testing for Vascular Sonographers (lec)	3
DMSU 282 Vascular Ultrasound II (lab/lec)	3	DMSU 284 Ultrasound Vascular II (lec) DMSU 285 Ultrasound Vascular II Lab	3 1
DMSU 261 ARDMS Registry Seminar (lec)	1	DMSU 286 Vascular Registry Review (lec)	2
DMSU 290 Introduction to Cardiac Ultrasound (lab/lec)	3	DMSU 287 Introduction to Abdominal and Cardiac Sonography (lec) DMSU 288 Introduction to Abdominal and Cardiac Sonography Lab	2 1
Total OLD Program Requirements	70	**Total NEW Program Requirements**	67

Cardiac Track			
OLD Program Requirements	**Credits**	**NEW Program Requirements**	**Credits**
BIOL 101 General Biology	4	BIOL 101 General Biology	4
BIOL 203 Anatomy and Physiology I	4	BIOL 203 Anatomy and Physiology I	4
BIOL 204 Anatomy and Physiology II	4	BIOL 204 Anatomy and Physiology II	4
MATH 141 College Algebra	3	MATH 138 Statistics	4
PHYS 101 Technical Physical Science	4	PHYS 101 Technical Physical Science	4
ENGL 121 College Composition	3	ENGL 121 College Composition	3
SPCH 110 Interpersonal Communication	3	SPCH 101 Introduction to Human Communication OR SPCH 105 Fundamentals of Public Speaking OR SPCH 110 Interpersonal Communication	3
PSYC 101 General Psychology	3	PSYC 101 General Psychology	3
DMSU 102 Introduction to Ultrasound (lab/lec)	3	DMSU 101 Introduction to Sonography (lec)	2
DMSU 112 Sectional Anatomy for Imaging Professionals (lec)	3	DMSU 112 Sectional Anatomy for Imaging Professionals (lab/lec)	3
DMSU 280 Introduction to Vascular Ultrasound (lab/lec)	3	DMSU 201 Vascular Sonography Introduction (lec) DMSU 202 Vascular Sonography Introduction Lab	2 1
CARD 120 Rhythm Analysis and 12-lead EKG (lab/lec)	2	DMSU 203 ECG for Cardiac Sonographers (lec)	3
DMSU 191 Adult Echocardiography I (lab/lec)	3	DMSU 204 Echocardiography I (lec) DMSU 205 Echocardiography I Lab	3 1
DMSU 292 Adult Echocardiography II (lab/lec)	3	DMSU 206 Echocardiography II (lec) DMSU 207 Echocardiography II Lab	3 1
DMSU 261 ARDMS Registry Seminar (lec)	1	DMSU 208 Cardiac Registry Review (lec)	2
DMSU 211 Ultrasound Physics and Instrumentation I (lab/lec)	3	DMSU 211 Ultrasound Physics and Instrumentation I (lec)	3
DMSU 212 Ultrasound Physics and Instrumentation II (lab/lec)	3	DMSU 212 Ultrasound Physics and Instrumentation II (lec)	3
DMSU 213 Pathophysiology for Imaging Professionals (lec)	3		
DMSU 151 Clinical Sonography I	2	DMSU 251 Clinical Practicum I	1
DMSU 252 Clinical Sonography II	2	DMSU 252 Clinical Sonography II	2
DMSU 253 Clinical Sonography III	4	DMSU 256 Clinical Practicum III	3
DMSU 254 Clinical Sonography IV	1	DMSU 254 Clinical Sonography IV	1
DMSU 255 Clinical Sonography V	6	DMSU 257 Clinical Practicum V	4
Total OLD Program Requirements	70	**Total NEW Program Requirements**	67