



**Diagnostic Medical Sonography  
Student Handbook  
2019**



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\*Once you have reviewed the handbook, please return the Handbook Acknowledgement, located on page 25, to the program director or designee.

Thank you.

## Introduction

Welcome to the Pittsburgh Career Institute Diagnostic Medical Sonography Program.

This program offers the academic preparation and clinical training required for a career as a General Sonographer. The program includes clinical experience in hospital and outpatient settings that provide ultrasound imaging services.

Students who satisfactorily complete the Diagnostic Medical Sonography Program are eligible to apply to take the American Registered Diagnostic Medical Sonography (ARDMS) national certification exam.

The instructors and staff of PCI are committed to support and assist you in reaching your goal to become a successful Diagnostic Medical Sonographer.

**The next 2 years will be very demanding for you. Your didactic schedule will require you to be available from 8:00 am to 5:00 pm Monday through Friday during your first year at PCI. The second year may also require attending your clinical site on Saturdays. This program will consist of very challenging courses which will necessitate a very dedicated commitment on your part.**

## **Program Objective and Goals**

The Diagnostic Medical Sonography program is designed to prepare competent entry-level general sonographers in the cognitive (knowledge), psychomotor (skills), and affective (behavior) learning domains. The Diagnostic Medical Sonography program at Pittsburgh Career Institute (PCI) is designed to prepare students to perform diagnostic ultrasound examinations required of an entry-level general sonographer to include, but not be limited to, the abdomen, pelvis, pregnant female pelvis, and superficial structures. Students are also introduced to vascular ultrasound. The student will have the opportunity to study the anatomy, physiology and pathophysiology of scanned organ systems, recognize the sonographic patterns of the organs, learn the protocols for a logical and thorough survey of the organs, and provide accurate and technical impressions to the interpreting physician. The core curriculum is structured to include an on-campus lecture component, an on-campus imaging laboratory component, and an off-campus integrated clinical component. The clinical portion of the curriculum is structured to include supervised experiences in the clinical environment that require competencies, logs, and evaluations completed by the student. At the conclusion of the program, graduates who have diligently attended class and their clinical externship, studied, and practiced their skills should be qualified to seek entry-level employment as diagnostic medical sonographers.

The Diagnostic Medical Sonography program at PCI is programmatically accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP). Therefore, graduates of the program are eligible for and encouraged to take the Registered Diagnostic Medical Sonographer (RDMS) exam offered by the American Registry of Diagnostic Medical Sonographers (ARDMS). This credential is a nationally recognized voluntary certification that could enhance employment opportunities. Registration requirements for taking and passing this examination are not controlled by PCI but by outside agencies and are subject to change by the agency without notice. Therefore, PCI cannot guarantee that graduates will be eligible to take this registration exam, or any other registration or certification exam, at all or at any specific time, regardless of their eligibility status upon enrollment.

## Diagnostic Medical Sonography Program Policies and Procedures

The school's catalog contains important policies and procedures in the Academic Information and General Information area that pertain to your time in the program. You are expected to adhere to all of the policies stated in the catalog and in the Student Handbook.

Please pay particular attention to the Criminal Background Check, Attendance, Clinical Externship, Clinical Externship Assignment, Clinical Attendance Requirements, Clinical Externship Conduct, and the school's Graduation requirements. The Student Code of Conduct policies are stated in the General Information section of the catalog.

If you have any questions about these policies or anything as stated in the catalog, please contact your program director for assistance.

### Attendance Policy

- Regular classroom attendance is not only an essential ingredient for academic achievement, but is also a fundamental building block for success after graduation. As part of the course requirements, students must attend at least 85 percent of the scheduled time for each on-campus course in order to achieve satisfactory attendance. Students in any of the clinical/externship courses are required to complete all scheduled hours and record attendance throughout the scheduled course to achieve satisfactory attendance. Students who do not achieve satisfactory attendance will earn a W and drop from the course. **Absences will include tardiness or early departures.** Students who are not in attendance for any portion of a class will accrue time absent calculated in minutes of the class period as reflected on each daily roster. Students who have been absent from all their scheduled classes for more than 3 consecutive calendar days, not including scheduled institute holidays or breaks, and/or students who officially withdraw from all current courses will be administratively withdrawn from the Institute. The school reserves the right to extend the 3 day timeframe due to extraordinary circumstances that affects the entire student population.
  - Attendance is determined by class and module.
1. Students who miss more than 10% of the hours in a course may be placed on attendance probation. Students on attendance probation are advised that employment potential is negatively impacted by a lack of a reliable attendance history. **If conditions of the attendance probation are violated, a student may be terminated from the program.**
  2. **Students who exceed 15% absences in an individual course will be dropped from the course and will receive a grade of "W".**

## Integrated Clinical

- Students are required to complete **100%** of their integrated clinical hours. If students miss any clinical time, (a **maximum of 2 days** is permitted) arrangements for **make-up time** must be made with the clinical site supervisor and any changes to the clinical schedule **must also be communicated to the clinical coordinator here at the school**. At no time should a student change clinical hours without first making the clinical coordinator aware of said change. Students will not be considered to have completed their integrated clinical until the site supervisor has certified all required attendance hours. See more detailed clinical attendance policies on page 12 of this document.

## Grading Policy

- The lowest acceptable grade in **core** classes will be 75%.
- If a student fails more than one core class they will be **dismissed** from the program.

## Graduation Requirements for Diagnostic Medical Sonography

- The student must successfully complete of all General Studies and Core discipline courses with a 75% or better grade. The student must successfully complete 1,145 hours of his/her clinical education. The student must successfully complete all required clinical protocols, competencies and assignments.
- DMS Grading Scale is as follows:

Grade	Grade Points		Percentage
A	4.0	Excellent	90 - 100
B	3.0	Good	80 – 89.99
C	2.0	Average	75 – 79.99
F	0.0	Failure	Below 75

## Dress

- Part of a professional presence involves appropriate dress and personal hygiene. All students are required to adhere to the below standards whenever attending a clinical course or at a clinical site. It is the student's responsibility to seek and obtain information specific to the clinical sites to which they are assigned and to show up at the site in compliance with the requirements. Failure to adhere to dress and grooming requirements may result in dismissal from the site with resulting loss of clinical hours. Repeated failure to adhere to the dress and grooming standards will result in dismissal from the program.
- Dress Code – Scrubs must be clean and neatly pressed at all times. Unless otherwise specified by a clinical site, dress should be as follows:
- Scrub pants and tops of an approved color.
- Lab coats with long sleeves are permitted.
- Shoes closed at the heel and toe, and soft soled. Shoes and shoe laces must be kept clean.

- Student name badge and ID are to be worn and easily visible at all times in clinical areas.

### **Grooming and Hygiene**

- Students are to be neat and well-groomed at all times. This includes proper personal hygiene such as washing face, hands and body; brushing teeth; brushing/combing hair; and appropriate steps to minimize body odor.
- Perfume, cologne, body scents are not to be worn in clinical areas.
- Hair must be neat, clean and completely off of the student's face. Students with longer hair styles must tie their hair back or pin it up so that it does not fall loosely over the shoulders or face.
- Fingernails must be short and clean.
- Facial hair must be neatly trimmed.
- No jewelry other than engagement and wedding rings, watch and small post earrings are allowed. This means no necklaces, bracelets, ankle bracelets, facial or other visible body piercing, or multiple earrings in one ear are allowed.
- Students should cover or take other appropriate steps to keep tattoos out of sight if required by their clinical site.

### **Cell Phone Usage**

- **Clinical Site:** Cell phones must be kept in purses, backpacks or lockers during patient care hours. Only to be used during lunch or break time.
- **Classroom:** Cell phones must be kept in backpack until break time. During lab, phone may be kept in backpack, purse or cell phone basket provided at door.

### **Laboratory guidelines**

- The lab is designed to simulate a patient care area. Students are required to wear clinical attire (except on school dress down days). Food and drink are **never** permitted in the lab. Coats, backpacks and cell phones must be placed in the appropriate designated area.

### **Student Privacy**

- The school fully complies with all requirements of the Family Educational Right to Privacy Act (FERPA). FERPA generally provides for the right of students to have access to their student files for purposes of review and prohibits the school from releasing identifiable information about the student to third parties without the student's permission. Students participating in clinical programs will be required to sign a release permitting the school to release relevant medical and other information required by clinical sites.



## **Program Specific Health Screening Requirements**

Students who are experiencing an infectious disease must take appropriate steps to avoid infecting patients, faculty and fellow students. In some cases, this may simply require the student to stay home during the period in which the student is contagious. Students who are experiencing a minor and short term infectious disease should discuss the matter with their preceptor/faculty member. Students with longer term conditions should discuss the matter with the Director of Education.

The School follows all applicable state and federal laws relating to disabling medical conditions. However, students should be aware that the presence of a blood-borne or other infectious disease may require restriction of a student's ability to participate in direct patient care. These matters are within the discretion of clinical infection control personnel and public health officials. Restriction from patient care responsibility may make it impossible for a student to complete a particular course of study.

Students must follow all infection control policies (e.g. relating to disposal of sharps) of the school and experiential training sites at all times. Failure to adequately protect the patient or others from avoidable infection is considered a serious breach of professional responsibility and may result in dismissal from the program.

Any injury or any exposure to blood borne pathogens should be immediately reported to the instructor, the CAO and the clinical site's infection control department. It is important to promptly report all injuries, not just those believed to be a risk for blood borne pathogen exposure. Do not wait until the end of a shift to report injury or exposure.

Complete a health event form and return the form to campus within 24 hours of the injury or exposure. The school maintains a separate specific policy regarding blood borne pathogens with which all clinical students must be familiar.

## **Physical Examinations, Immunizations and Infectious Diseases**

Students are required to undergo a physical examination prior to starting their clinical assignments.

Students are required to abide by the School's Student Immunization Policy. This policy requires students to maintain immunizations against certain diseases and to be tested on a current basis for other diseases such as TB. The current list of required immunizations and tests can be obtained from the Director of Education. Students who have religious or medical reasons for refusing immunization or testing may request an exemption from the Director of Education. Exemption will be allowed only for legitimate religious or medical reasons and only after the student has signed an appropriate document indicating that they understand and agree to be solely responsible for any health, medical, legal or other risks incurred because of their exemption. PCI cannot guarantee clinical placements for students who are unable to provide proof of current immunization and testing.

## **Pregnancy**

Students who are or who become pregnant should promptly disclose the fact of their pregnancy to their instructors. Work in the healthcare setting can involve exposure to chemicals, radiation levels, infectious diseases or tasks that present risks to the fetus or to the student's ability to carry the fetus to term. Pregnant students are therefore encouraged to discuss the risks, if any, presented by their particular program, the steps that might be available to minimize or eliminate the risk, and the advisability of continuing or suspending participation in the program with their instructor(s) and with their own health care providers. Students who are, or become pregnant, may not be able to continue with the program while pregnant.

## **Requirements for DMS participants**

The curriculum leading to completion of the Diagnostic Medical Sonography program requires students to engage in diverse, complex, and specific experiences essential to the acquisition and practice of essential healthcare professional skills and functions. Unique combinations of cognitive, affective, psychomotor, physical and social abilities are required to satisfactorily perform these functions. In addition to being essential to the successful completion of the requirements of the program, these functions are necessary to ensure the health and safety of patients, fellow candidates, faculty and other healthcare providers. These requirements are specific to the DMS program and are specified by our accreditor.

## **Motor Skills**

Candidates should have sufficient motor function so that they are able to execute movements required to perform ultrasound examinations as well as general care and treatment to patients in ALL health care settings. For example: must be able to perform basic life support and function in an emergency situation to assist in moving patients from a chair to a bed, examination table or from a wheelchair to another location.

## **Sensory/Observation**

Candidates must be able to acquire the information presented through demonstrations and experiences in the healthcare setting. He/she must be able to observe a patient accurately, at a distance and close at hand, observe and appreciate non-verbal communications when performing an examination, assessment or administering of treatment. The candidate must be capable of perceiving the signs of disease as manifested through the sonographic exam. Such information is derived from images of the body in cross section or otherwise, palpable changes in various organs and tissues, and auditory information (i.e. patient voice, Doppler signals).

## **Communication**

The candidate must communicate effectively and sensitively with other students, faculty, staff, patients, family, and other professionals. He/she must express his/her ideas and feelings clearly and demonstrate a willingness and ability to give and receive feedback. A candidate must be able to: convey or exchange information at a level allowing development of a health history; identify problems presented; explain alternative solutions; and give directions during treatment and post-treatment. The candidate must be able to communicate effectively in oral and written forms. The candidate must be able to process and communicate information on the patient's status with accuracy in a timely manner to members of the health care team. The appropriate communication may also rely on the candidate's ability to make a correct judgment in seeking supervision and consultation in a timely manner.

## **Cognitive**

A candidate must be able to measure, calculate, reason, analyze, integrate and synthesize at an appropriate level of their education. The candidate must be able to quickly read and comprehend extensive written material. He/she must also be able to evaluate and apply information and engage in critical thinking in the classroom and clinical setting.

## **Behavioral/Emotional**

A candidate must possess the emotional health required for the full utilization of his or her intellectual abilities, the exercise of good judgment, the prompt completion of all responsibilities attendant to the diagnosis and care of patients and families. In addition, he/she must be able to maintain mature, sensitive, and effective relationships with patients, students, faculty, staff and other professionals under all circumstances including highly stressful situations. The candidate must have the emotional stability to function effectively under stress and to adapt to an environment that may change rapidly without warning and/or in unpredictable ways. The candidate must be able to experience empathy for the situations and circumstances of others and effectively communicate that empathy. The candidate must know that his or her values, attitudes, beliefs, emotions, and experiences affect his or her perceptions and relationships with others. The candidate must be able and willing to examine and change his or her behavior when it interferes with productive individual or team relationships. The candidate must possess skills and experience necessary for effective and harmonious relationship in diverse academic and working environments.

## **Professional Conduct**

Candidates must possess the ability to reason morally and practice in an ethical manner. Candidates must be willing to learn and abide by professional standards of practice. He/she must possess attributes that include compassion, empathy, altruism, integrity, honesty, responsibility and tolerance. Candidates must be able to engage in patient care delivery in ALL settings and be able to deliver care to ALL patient populations including but not limited to children, adolescents, adults developmentally disabled persons, medically compromised patients, and vulnerable adults.

## Required BLS

Students must have current basic life support (“BLS”) prior to the clinical portion of the program. Students will be given the opportunity to take part in the American Heart Association BLS course taught by a certified instructor at the school before they attend their first clinical rotation.

Students will be required to present proof of current certification prior to registration for any clinical course work, and will not be allowed to participate in clinical activities until proof of current certification is provided and on file. Inability to participate in clinical activities will jeopardize the student’s ability to pass the clinical competencies for the course or completion of the program.

## Reasonable Accommodation for Disabilities

Students with disabilities are expected to perform all the essential functions of the program with or without reasonable accommodation. While the program will make every effort to work with our students with disabilities to accommodate their disability-related needs, it is important to note we are not required to provide requested accommodations that would fundamentally alter the essential function or technical standards of the program.

## Required and Elective Clinical Competencies

All required competencies **must** be completed in order to graduate.

<u>Required</u>	<u>Elective</u>
Equipment	Abdominal Doppler
Liver	Biophysical Profile
Biliary	Guided Fluid Aspiration/Drainage**
Pancreas	Male Pelvis (transabdominal)
Spleen	Upper or Lower Arterial Doppler
Renals	Upper or Lower Venous Doppler
Abdominal Vessels	Carotid Doppler
Abdomen Complete	Breast
GYN (transabdominal)	Musculoskeletal
GYN (transvaginal)	Guidance/Biopsy **
1 <sup>st</sup> Trimester OB	Amniocentesis **
2 <sup>nd</sup> Trimester OB	Gastrointestinal
3 <sup>rd</sup> Trimester OB	Adrenals
Scrotum	Prostate
Thyroid	
Non-Cardiac Chest	
Abdominal Doppler	

\*\*Invasive Procedures

## **Attendance for Clinical Rotations**

Students must attend clinical rotations on the days and hours designated by the site. Students are required to complete 100% of the hours required for each course. A maximum of 2 absences are allowed per term, or 10-week period. The hours missed due to these absences must be made up to achieve 100% of the required hours per course. In the event a student will be absent from a site, the student must call the site and the appropriate school official prior to their start time. Should the site supervisor or school/program official determine that a student is not reliable for any reason, or has missed more than 2 days, the student may be removed from the site and issued a "W" grade. In order to attempt the course again, the student must complete an academic appeal. The appeal must be in writing and provide a detailed explanation as to the reason for the excessive absences, as well as a plan for how additional absences will not occur. This appeal must be approved by the Chief Academic Officer prior to being assigned to another clinical rotation. Please note, if an appeal is granted, the student must complete 100% of the clinical hours during their second attempt. In the event a student is placed on a Leave of Absence, and is issued a "WP" grade, the previously completed hours may be combined with the second attempt to complete 100% of the required hours per course.

In the event a student is removed from a clinical site due to behavior, the student may receive a "F" grade and may be dismissed from Pittsburgh Career Institute. The student must complete an academic appeal and provide a detailed plan for how this behavior will not occur again. This appeal must be approved by the Chief Academic Officer prior to being assigned to another clinical rotation. In the case of dismissal, the student must complete a conduct appeal before the Disciplinary Committee. If an appeal is granted, the student must complete 100% of the clinical hours during their second attempt.

Scheduled Pittsburgh Career Institute breaks apply to students on clinical rotation. Additionally, students are not permitted to be on site if PCI is closed.

It is the responsibility of the student to provide the School with a time sheet signed by the site supervisor documenting hours completed for each week no later than the Monday of the following week. Students will not be considered to have completed their clinical rotation until the site supervisor and appropriate school official has certified all required attendance hours. Falsification of time sheets is fraudulent and will result in dismissal from Pittsburgh Career Institute. Time sheets received more than one week from their due date will result in the student not receiving credit for the hours completed on the late time sheet.

## **Patient Privacy**

Federal law also protects the right of patients of health care facilities to maintain the privacy of their medical information. Basically, any information about patients to which you have access must not be shared with anyone other than your instructors or clinical personnel who are involved in or responsible for the treatment of that patient. The importance of students maintaining confidentiality of patient identifiable medical information cannot be overstated. Students must complete the HIPAA Education Module, relating to these federal privacy laws, prior to being enrolled in any clinical course. Improper disclosure of identifiable patient information, including gossip between students, will normally be considered grounds for immediate dismissal from the program, and may also carry civil or criminal legal penalties.

## **Transportation to the Clinical Site**

Transportation to and from the clinical sites and parking fees are the responsibility of the student. Every effort is made to place students within a reasonable distance from their home, however the school reserves the right to place a student within a 60 mile radius of the school.

## **Student Work Policy**

Paid employment of a student in a clinical department will not be used in lieu of the time assigned to the structured clinical experience.

Employment, volunteer services or any other activities cannot interfere with clinical rotations or used in lieu of clinical rotations. Students will not be allowed to use employment, volunteer services or any other activities as clinical experience. Students may not substitute or replace paid staff members.

## Master Course Outline

### Diagnostic Medical Sonography-Core

COURSE NUMBER	COURSE TITLE	CLOCK HOURS	SEMESTER CREDITS
<b>Core Curriculum Requirements</b>			
AH-135	Medical Terminology	40	2.5
ALH-166	Human Anatomy and Physiology	60	3.5
DMS-206	Ultrasound Terminology	40	2.5
DMS-220	Introduction To Clinical Education	229	5.0
DMS-225	Ultrasound Case Review	50	3.0
DMS-226	ARDMS Registry Exam Seminar	40	2.5
DMS-230	Clinical Education I	229	5.0
DMS-234	Clinical Education IV	229	5.0
DMS-240	Clinical Education II	229	5.0
DMS-250	Clinical Education III	229	5.0
DMS-300	Abdominal Ultrasound I	80	4.0
DMS-301	Abdominal Ultrasound II	40	2.5
DMS-310	Superficial Anatomy	60	3.0
DMS-320	Physics and Instrumentation II	40	2.5
DMS-340	Abdominal Pathology I	40	2.5
DMS-341	Abdominal Pathology II	40	2.5
DMS-350	Abdominal Doppler	60	3.0
DMS-400	Obstetrical Pathology I	50	3.0
DMS-401	Gynecology and Obstetrics Ultrasound	40	2.5
DMS-410	Vascular Ultrasound I	60	3.0
DS-101	Ultrasound Lab I	60	2.0
DS-102	Ultrasound Lab II	60	2.0
DS-104	Ultrasound Lab III	60	2.0
DS-110	Introduction To Ultrasound	40	2.5
DS-120	Physics and Instrumentation I	<u>40</u>	<u>2.5</u>
		<b>2145</b>	<b>78.5</b>

**Diagnostic Medical Sonography-**  
**Associate in Specialized Technology Degree Program**  
*Subject to change depending on availability of Gen Ed classes offered*

Module	Course #	Course Name	Pre-Req	Credits	Lecture Hours	Lab Hours	Clinic	Total Hour	
MOD 1	AH-135	Medical Terminology	None	2.5	40	0	0	40	
	GS-211	Algebra	None	2.5	40	0	0	40	
	PHY-113	Introduction to Physics	None	2.5	40	0	0	40	
Mod 2	ALH-166	Human Anatomy & Physiology- All Body System	None	3.5	45	15	0	60	
	GS-100A	English Composition	None	2.5	40	0	0	40	
	GS-105A	Introduction to Psychology	None	2.5	40	0	0	40	16/360
MOD 3	DS-110	Introduction to Ultrasound	All prior	2.5	40	0	0	40	
	GS-270	Patient care/Hospital Policies	None	2.5	40	0	0	40	
	DMS-206	Ultrasound Terminology	All Prior	2.5	40	0	0	40	
Mod 4	DMS-300	Abdominal Ultrasound I	DS-110	4	45	35	0	80	
	DMS	Computer Concepts I	GS 116	1.5	25	15	0	40	13/240
MOD 5-6	DS-101	Ultrasound Lab I	DMS-300	2	0	60	0	60	
	DMS-301	Abdominal Ultrasound II	DMS-300	2.5	40	0	0	40	
	DS-120	Physics & Instrumentation I	AH 135; PHY-113 DS-110	2.5	40	0	0	40	7/140
MOD 7-8	DMS-320	Physics & Instrumentation II	DS-120	2.5	40	0	0	40	
	GS-117	Computer Concepts II	GS-117	1.5	25	15	0	40	
	DS-102	Ultrasound Lab II	DS-101/all prior	2	0	60	0	60	
	DMS-340	Abdominal Pathology I	DMS-301	2.5	40	0	0	40	8.5/180
MOD 9-10	DMS-401	Gynecology and Obstetric Ultrasound	DMS-301	2.5	40	0	0	40	



	DS-104	Ultrasound Lab III	DS-102/all prior	2	0	60	0	60	
	GS-140	Biomedical Ethics	None	2.5	40	0	0	40	7/200
Mod 11-12	DMS-220	Introduction to Clinical Education	all prior	5	0	0	229	229	
	DMS-341	Abdominal Pathology II	DMS-301; DMS-340; DMS-401	2.5	40	0	0	40	
	DMS-310	Superficial Anatomy	DMS-206	3	30	30	0	60	10.5/329
Mod 13-14	DMS-230	Clinical Education I	DMS-220	5	0	0	229	229	
	DMS-410	Vascular Ultrasound I	DS-110; DMS-206; All	3	30	30	0	60	
	DMS-400	Obstetrical Pathology I	DMS-401	3	50	0	0	50	11/339
Mod 15-16	DMS-240	Clinical Education II	DMS-230	5	0	0	229	229	
	DMS-350	Abdominal Doppler	DMS-300; DMS-301 DMS 410	3	30	30	0	60	8/289
Mod 17-18	DMS-250	Clinical Education III	DMS-240	5	0	0	229	229	
	ALH-155	Career Success	None	2.5	40	0	0	40	
	DMS-226	ARDMS Registry Exam Seminar	ALL prior	2.5	40	0	0	40	10/309
Mod 19-20	DMS-234	Clinical Education IV	DMS-250	5	0	0	229	229	
	DMS-225	Ultrasound Case Review	ALL prior	3	50	0	0	50	8/279
		100 Weeks- Day Version	Total	99	1010	350	1145	2505	99/2505

## CAAHEP

### Standards and Guidelines for the Accreditation of Educational Programs in Diagnostic Medical Sonography

#### 1. Curriculum Requisites

The following curriculum requisites must be met prior to the beginning of the core curriculum of the diagnostic medical sonography education program; they must be included in college level courses:

- a. Algebra, statistics, or higher mathematics course
- b. General college-level physics and/or radiographic physics
- c. Communication skills/English
- d. Human anatomy and physiology

The communication skills requisite may be met by a variety of courses including English, speech, or composition. The following curriculum requisites must either be met prior to the diagnostic medical sonography education program or be presented within the program at the college level and must include the following:

- a. Patient care
- b. Medical ethics and law
- c. Medical terminology and
- d. Pathophysiology

#### **Master Plan**

2. The master plan of education must be sufficiently detailed to provide for continuity, delivery, and ongoing evaluation of the program in the event of staff changes. The master plan of education must be available for review. Documentation of the program master plan of education should include the following:

Philosophies and goals of the program and institution

- Curriculum sequence with rationale
- Course outlines, course descriptions, and performance (behavioral) objectives
- Clinical education plan demonstrating correlation with the didactic curriculum
- List of clinical affiliates and contact person for each site
- Performance objectives for clinical education
- Evaluation tools of learning concentration competencies
- Grading policy
- Objectives, evaluation tools, and grading criteria for each course
- Description of evaluation methods for each course
- Program policies
- Internal and external mechanisms for evaluating program effectiveness

3. Learning Competencies Common to Each Concentration

The minimum competency offered by the program must include the following:

**a. Utilize oral and written communication**

- 1) Maintain clinical records;
- 2) Interact with the interpreting physician or other designated physicians with oral or written summary of findings as permitted by employer policy and procedure
- 3) Recognize significant clinical information and historical facts from the patient and the medical records, which may impact the diagnostic examination
- 4) Comprehend and employ appropriate medical terminology, abbreviations, symbols, terms, and phrases; and
- 5) Educate other health care providers and the public in the appropriate applications of ultrasound and other diagnostic vascular evaluation, including the following:
  - Medical terminology
  - Sonographic/other vascular terminology
  - Pertinent clinical signs, symptoms, and laboratory tests
  - Pertinent legal principles

**b. Provide basic patient care and comfort**

- 1) Maintain infection control and utilize standard precautions;
- 2) Anticipate and be able to respond to the needs of the patient;
  - Demonstrate age related competency (i.e., neonates, pediatric patients, adolescents, adults, and Obstetric patients)
  - Respond appropriately to parental needs
  - Recognize when sedation may be appropriate
  - Demonstrate appropriate care in nursery and intensive care environment (ancillary equipment, thermal, central venous lines, ET tubes, respiratory needs)
- 3) Identify life-threatening situations and implement emergency care as per employer procedure, including the following:
  - Pertinent patient care procedures
  - Principles of psychological support
  - Emergency conditions and procedures
  - First aid and resuscitation techniques
- 4) Proper patient positioning

**c. Demonstrate knowledge and understanding of human gross anatomy and sectional anatomy.**

- 1) Evaluate anatomic structures in the region of interest; and
- 2) Recognize the sonographic appearance of normal tissue structures, including the following:
  - Sectional anatomy
  - Embryology
  - Normal sonographic patterns

**d. Demonstrate knowledge and understanding of physiology, pathology, and pathophysiology.**

- 1) Obtain and evaluate pertinent patient history and physical findings;
- 2) Extend standard diagnostic testing protocol as required by patient history or initial findings;
- 3) Review data from current and previous examinations to produce a written/oral summary of technical findings, including relevant interval changes, for the interpreting physician's reference and
- 4) Recognize examination findings that require immediate clinical response and notify the interpreting physician of such findings, including the following:
  - Patient interview and examination techniques
  - Chart and referral evaluation
  - Diagnostic testing protocols related to specific disease conditions
  - Physiology including blood flow dynamics
  - Pertinent pathology and pathophysiology
  - Pertinent legal issues

**e. Demonstrate knowledge and understanding of acoustic physics, Doppler ultrasound principles, and ultrasound instrumentation.**

- 1) Select the appropriate technique(s) for examination(s) being performed;
- 2) Adjust instrument controls to optimize image quality;
- 3) Perform linear, area, circumference, and other related measurements from sonographic images or data;
- 4) Recognize and compensate for acoustical artifacts
- 5) Utilize appropriate devices to obtain pertinent documentation
- 6) Minimize patient exposure to acoustic energy
- 7) Apply basic concepts of acoustic physics which include the following:
  - Sound production and propagation
  - Interaction of sound and matter
  - Instrument options and transducer selection
  - Principles of ultrasound instruments and modes of operation
  - Diagnostic Medical Sonography 9
  - Operator control options
  - Physics of Doppler
  - Principles of Doppler techniques
  - Methods of Doppler flow analysis
  - Recording techniques
  - Acoustic artifacts
- 8) Emerging Technologies

**f. Demonstrate knowledge and understanding of the interaction between ultrasound and tissue and the probability of biological effects in clinical examinations, including the following:**

- Biologic effects
- Pertinent in-vitro and in-vivo studies
- Exposure display indices
- Generally accepted maximum safe exposure levels
- ALARA principle

**g. Employ professional judgment and discretion.**

- 1) Protect the patient's right to privacy based on current federal standards and regulations;
- 2) Maintain confidentiality; and
- 3) Adhere to the professional codes of conduct/ethics through the following:
  - Medical ethics
  - Pertinent legal principles
  - Professional interaction skills
  - Professional scopes of practice

**h. Understand the fundamental elements for implementing a quality assurance and improvement program, and the policies, protocols, and procedures for the general function of the ultrasound laboratory, including the following:**

- Administrative procedures
- Quality control procedures
- Elements of quality assurance program
- Records maintenance
- Personnel and fiscal management
- Trends in health care systems

**i. Recognize the importance of continuing education, through the following:**

- Professional journals
- Conferences
- Lectures
- In-house educational offerings
- Professional organizations and resources
- Recent developments in sonography
- Research statistics and design

**j. Recognize the importance of, and employ, ergonomically correct scanning techniques:**

- Personal fitness
- Supports, tools, and devices
- Equipment adjustments
- Patient positioning
- 

**4. The General Learning Concentration must include the following:**

**a.** Demonstrate the ability to perform sonographic examinations of the abdomen, superficial structures, non-cardiac chest, and the gravid and nongravid pelvis according to protocol guidelines established by national professional organizations and the protocol of the employing institution utilizing real-time equipment with both transabdominal and endocavity transducers, and Doppler display modes.

**b.** Recognize and identify the sonographic appearance of normal anatomic structures,

including anatomic variants and normal Doppler patterns:

- Liver
- Biliary system
- Pancreas
- Urinary tract
- Adrenal glands
- Spleen

- Prevertebral vessels
- Peritoneal cavity, including potential spaces
- Gastrointestinal tract
- Noncardiac chest
- Neck
- Breast
- Scrotum
- Prostate
- Anterior abdominal wall
- Extremities
- Brain and spinal cord
- Musculoskeletal

**c.** Recognize, identify, and appropriately document the abnormal sonographic and Doppler patterns of disease processes, pathology, and pathophysiology of the structures listed in III.C.4.b. Modify the scanning protocol based on the sonographic findings and the differential diagnosis:

- History and physical examination
- Related imaging, laboratory, and functional testing procedures
- Clinical differential diagnosis
- Role of ultrasound in patient management

Sonographic and Doppler patterns in clinical diseases that may occur in the following categories:

- Iatrogenic
- Degenerative
- Inflammatory
- Traumatic
- Neoplastic
- Infectious
- Obstructive
- Congenital
- Metabolic
- Immunologic

**d.** Recognize and identify the sonographic appearance of normal anatomic structures of the female pelvis, including anatomic variants and normal Doppler patterns:

- Reproductive system
- Pelvic muscles
- Suspensory ligaments
- Peritoneal spaces
- Pelvic vasculature

**e.** Recognize and identify the sonographic appearance of normal maternal, embryonic, and fetal anatomic structures during the first, second, and third trimesters:

- Sectional anatomy
- Pertinent measurement techniques
- Doppler applications

**f.** Recognize, identify, and appropriately document the sonographic appearance of gynecologic disease processes, pathology, and pathophysiology:

- History and physical examination
- Related imaging, laboratory, and functional testing procedures
- Differential diagnosis

- Role of ultrasound in patient management
- Abnormal sonographic patterns:
  - Iatrogenic
  - Degenerative
  - Inflammatory
  - Traumatic
  - Neoplastic
  - Infectious
  - Obstructive
  - Congenital
  - Metabolic
  - Immunologic
  - Contraceptive devices
  - Infertility procedures
  - Doppler applications

**g.** Recognize, identify, and appropriately document the sonographic appearance of Obstetric abnormalities, disease, pathology, and pathophysiology:

- History and physical examination
- Related imaging, laboratory, and functional testing procedures
- Differential diagnosis
- Role of ultrasound in patient management
- Use of three-dimensional obstetric sonography
- Abnormal sonographic characteristics in pregnancy:
  - Placenta
  - Congenital/genetic anomalies
  - Growth abnormalities
  - Amniotic fluid
  - Viability
  - Multiple gestation
  - Fetal monitoring
  - Maternal factors
  - Postpartum
  - Fetal therapy

**h.** Demonstrate knowledge and understanding of the role of the sonographer in performing interventional/invasive procedures.

## **Diagnostic Medical Sonography Resources**

Listed below are resources that you will find helpful in the Diagnostic Medical Sonography field as a student and graduate. These organizations provide information about the Diagnostic Medical Sonography field and opportunities to network with other Diagnostic Medical Sonography at conferences and seminars. Continuing education opportunities are important for Diagnostic Medical Sonography and information about them can be found through the organizations listed below. Some organizations have fees that apply to membership and their services and this information can be found on their individual websites. Please review their websites for specific details about the mission of each organization and what they provide to the Diagnostic Medical Sonography field. This list is just small sample of the different professional organizations and informational websites that are available to the Diagnostic Medical Sonography field.

### **ACCREDITATION/WEBSITES:**

Commission on Accreditation of Allied Health Education Programs (CAAHEP)  
25400 US Highway 19 North, Suite 158  
Clearwater, Florida 33763  
(727) 210-2350.  
[www.CAAHEP.org](http://www.CAAHEP.org)

Joint Review Committee on Education in Diagnostic Medical Sonography (JRC-DMS)  
6021 University Boulevard Suite 500  
Ellicott City, MD 21043  
Tel: 866.738.344  
[www.JRCDMS.org](http://www.JRCDMS.org)

### **CREDENTIAL EXAM WEBSITE:**

ARDMS (American Registry for Diagnostic Medical Sonographers)  
51 Monroe Street, Plaza East One  
Rockville, MD 20850-2400  
Tel: 301.738.8401 or 800.541.9754 FAX: 301.738.0312  
[www.ARDMS.org](http://www.ARDMS.org)

### **STUDENT SOCIETIES:**

Society of Diagnostic Medical Sonography  
2745 N. Dallas Pkwy, Suite 350  
Plan, TX 75093-8730  
Tel: 214.473.8057 or 800.229.9506 Fax: 214.473.8563  
[www.SDMS.org](http://www.SDMS.org)

American Institute of Ultrasound in Medicine  
14750 Sweitzer Lane Suite 100  
Laurel, MD 20707  
Tel: 301.498.4100  
[www.AIUM.org](http://www.AIUM.org)



### **Disclaimer**

This Handbook is intended as a guide to the School's policies pertaining to the clinical aspects of your education that are in existence at the time of its writing. This Handbook is intended as a guide to provide information regarding common areas of concern; however it cannot anticipate and answer every question or problem that might arise. As a result, amendments or supplements to the Handbook can be made by the School as it deems necessary with or without direct notice to students. If you are unclear about any of your obligations or rights as a student in a clinical activity, you should discuss your questions with the faculty member leading the activity or the Director of Education of your school. We believe that these rules will promote a fair and effective learning environment for all of our students. The faculty and staff of the clinical programs wish you every success in your activities.

## Diagnostic Medical Sonography Student Handbook Acknowledgement

I acknowledge that by signing this document, I have received the Diagnostic Medical Sonography Student Handbook. Upon receipt, the Program Director or Designee has reviewed the material contained in this book with me. I am acknowledging that I have received, reviewed, and understand each section of the Student Handbook. I also understand that the school's Catalog also contains policies and procedures that apply to my enrollment and time in the program. I understand that failure to comply with the established policies may result in suspension or termination from the program. I understand that policies and procedures may change while I am a student in the program, so if I have any questions about the Student Handbook or the school's Catalog, I am to contact my program director or program faculty.

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Printed Name

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Signature

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Date

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Program Official

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Date