



Diagnostic Medical Sonography Student Handbook 2016

Table of Contents

| | |
|--|---------|
| Program Objectives and Goals | Page 3 |
| Diagnostic Medical Sonography Program Policies and Procedures..... | Page 4 |
| Diagnostic Medical Sonography Forms Health Forms..... | Page 10 |
| Student Policy for Ultrasound Labs..... | Page 16 |
| DMS Master Plan for Clinical Education..... | Page 19 |
| Syllabi..... | Page 32 |
| Course Outline..... | Page 39 |
| Resources..... | Page 40 |
| CAAHEP Standards..... | Page 41 |
| Student Handbook Acknowledgement..... | Page 57 |

* Once you have reviewed the handbook, please return the Handbook Acknowledgement, located on page 57, to the program director or designee. Thank you.

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, Pittsburgh (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 externship, studied, and practiced their skills should have the skills 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% of the scheduled time for each on-campus course in order to achieve satisfactory attendance
- 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, arrangements for make-up time must be made with the clinical site supervisor. Students will not be considered to have completed their integrated clinical until the site supervisor has certified all required attendance hours.

Grading Policy

- The lowest acceptable grade in core classes will be 75%.

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.

Dress and Grooming

- 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 may result in dismissal from the program.
- Dress Code – Uniforms 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.
 - All white lab coats with long sleeves.
 - Shoes closed at the heel and toe, and soft soled. Shoes and shoe laces must be kept clean.
 - Student nametag and ID are to be worn and easily visible at all times in clinical areas.
 - Water resistant watch with a sweep second hand.
 - No long lab coats, sweaters or patient gowns may be worn.
- **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. Acrylic or other artificial nails and nail polish are not allowed in clinical areas.
 - Facial hair must be neatly trimmed.
 - No jewelry other than engagement and wedding rings, watch and small post earrings is allowed. This means no necklaces, bracelets, ankle bracelets, facial or other visible body piercing, or multiple earrings in one ear are allowed.
 - Make up may be worn but should not be excessive.
 - Students should cover or take other appropriate steps to keep tattoos out of sight.

Physical Examinations, Immunizations and Infectious Diseases

Students may be required to undergo a physical examination/capacities evaluation prior to starting certain 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. The School cannot guarantee clinical placements for students who are unable to provide proof of current immunization and testing.

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.

INFECTION CONTROL POLICY

The purpose of the Infection Control Policy is to ensure the safety of patients, families, health care workers, and students from infectious diseases. Infection control is the use of techniques and precautionary methods in order to prevent the transmission of contagion, nosocomial infections, and AIDS. The following are general infection control (Universal Precautions) guidelines.

1. Remove jewelry, such as rings with stones and nail polish. They harbor microorganisms that are difficult to remove.
2. Always wear freshly laundered clothing.
3. Practice good hand washing techniques.
4. Use the following precautions when so prescribed:
 - a. Wear gloves
 - b. Wear protective eye wear (goggles)
 - c. Wear appropriate gowns
 - d. Dispose of all contaminated wastes into its proper disposal site(s) or container(s). Check your particular experiential training site procedures.
 - e. Clean all surfaces with an approved disinfectant or germicide
 - f. Wash hands before and after contact with patients
5. Familiarize yourself with the Infection Control Policy at your particular experiential training site.

Required BLS

Students must have current basic life support (“BLS”) prior to the externship portion of the program. It is the student’s responsibility to obtain and maintain these certifications. BLS certification may be obtained through the American Red Cross and/or the American Heart Association.

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.

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. Those who are and elect to continue in the program will be required to sign a document verifying that these discussions have occurred and that the student is aware of and assumes the risks of continuing with the program while pregnant.

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.

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 experiences and sites is the responsibility of the student.

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.



Pittsburgh Career Institute
 421 Seventh Avenue
 Pittsburgh, PA 15219
 ((412) 281-2600
 (412) 227-0807 -fax

Today's Date ____/____/____

Student Diagnostic Tests and Immunizations

Student Name: _____

Student ID: _____

Program of Study: **Diagnostic Medical Sonography**

Please provide documentation from a licensed Healthcare Practitioner or Health Department providing testing or immunizations. A signature is required on this form or information can be provided on clinical letterhead or labeled prescription pad. Please attach any attachments to this form.

Tests

| Required Test | Date Given | Date Read And Results | Signature of Healthcare Provider |
|---|------------|-----------------------|----------------------------------|
| Tuberculin (PPD) (Must be a 2 step PPD) 1 st step | | | |
| 2 nd step | | | |
| Chest X-ray (if indicated) **Please attach report to form | | | |

Immunizations

| Immunization | Date | Titer results (attach lab documentation) | Signature of Healthcare Provider or Stamp from Healthcare Facility |
|--|-------------------|--|--|
| Tetanus and Diphtheria (Td); Tdap may be substituted (must be immunized if longer than 10 years) | | | |
| Measles, Mumps, Rubella (MMR) | Need Titer | | |
| Varicella (Chicken Pox) | Need Titer | | |

| | | | |
|---|-------------------|--|--|
| Hepatitis B – Immunized | Need Titer | | |
| Hepatitis B – First dose | | | |
| Hepatitis B – Second dose (must be within 1-2 months of first dose) | | | |
| Hepatitis B – Third dose (must be within 4-6 months of 1 st dose) | | | |
| Flu Shot | | | |

Physical Examination

| | | |
|--|---------------------|----------------|
| Temperature: | Respiratory: | Pulse: |
| Blood Pressure: _____/_____ _____ | Height: | Weight: |

General Information

| | |
|---|-----------------|
| Any Physical Limitations: (able to assist in lifting patients, move equipment on wheels – up to 500 lbs., move patients in wheelchairs and stretchers, maintain prolonged arm positions) | Explain: |
| Medical History: | |
| Routine Medications: | |
| Surgical History: | |
| Allergies: (any known latex allergies) | |

Signature of Examining Healthcare Provider

Date

| | |
|-------------------------------|--|
| Physician's Name: | |
| Street Address: | |
| City, State, Zip Code: | |
| Phone Number: | |



Pittsburgh Career Institute
421 Seventh Avenue
Pittsburgh, PA 15219
(412) 281-2600
(412) 227-0807 - fax

Name _____

HEPATITIS B VACCINE HISTORY FORM

I understand that due to my occupational exposure to blood and other potentially infectious materials I may be at risk of acquiring Hepatitis B virus (HBV) infection. HBV is a serious viral infection of the liver that can lead to chronic liver disease, cirrhosis, liver cancer, liver failure, and even death. The disease is transmitted by blood and or body fluids and many people will have no symptoms when they develop the disease. The primary risk factors for Hepatitis B vaccine are available to all age groups. A series of three (3) doses of the vaccine are required for optimal protection. Missed doses may still be sought to complete the series if only one or two have been acquired. The HBV vaccine has a record of safety and is believed to confer lifelong immunity in most cases.

_____ I hereby certify that I have read this information and I have received a complete three dose series of the Hepatitis B Vaccine.

_____ I hereby certify that I have read this information and I have elected not to receive the Hepatitis B Vaccine.

_____ I hereby certify that I have read this information and I am in the process of receiving the complete three dose series of the Hepatitis B Vaccine.

For more information about the Hepatitis disease and its vaccine, please contact your local health care provider or consult the Center for Disease Control and Prevention website at www.cdc.gov.

Signature _____ Date _____



Pittsburgh Career Institute
421 Seventh Avenue
Pittsburgh, PA 15219
(412) 281-2600
(412) 227-0807 – fax

PITTSBURGH CAREER INSTITUTE
BLOOD BORNE PATHOGENS AND EXPOSURE CONTROL PLAN RELEASE FORM
– REVISED 2014

I (student name) _____ have received and read the

Blood Borne Pathogens Exposure Control Plan issued by, Pittsburgh Career Institute. I have also

received information regarding blood borne pathogens in my Patient Care Class. By signing

below, I am acknowledging that I have read and understood all procedures to be followed in both

prevention and in the event of an accidental exposure to Blood Borne Pathogens.

Student Name _____

Student Signature _____

Date Signed _____



Pittsburgh Career Institute
 421 Seventh Avenue
 Pittsburgh, PA 15219
 ((412) 281-2600
 (412) 227-0807 –fax

**DIAGNOSTIC MEDICAL SONOGRAPHY
 NOTICE OF CONSENT AND WAIVER OF LIABILITY**

Below is a notice of the Student Service Work Policy. Please read the notice in its entirety, then sign and date to acknowledge your understanding and acceptance of its terms.

NOTICE OF POLICY

Students may not take either the responsibility or the place of qualified staff. However, after demonstrating competency, students may be permitted to undertake certain defined activities under the appropriate supervision and direction. Students may be employed in a clinical setting outside regular clinical education hours, provided the work does not interfere with regular academic responsibilities. The work must be non-compulsory, paid, and subject to standard employee policies.

By Signing below, I acknowledge that I have read and understand the above Notice of Student Service Work Policy and agree to its terms.

 Student Signature

 Date

 Student Name, printed

 Externship Site Supervisor Signature

 Date

 Site Supervisor Name, printed



Pittsburgh Career Institute
421 Seventh Avenue
Pittsburgh, PA 15219
(412) 281-2600
(412) 227-0807 –fax

Student Policy for Ultrasound Labs

Rationale and General Procedures

An ultrasound lab is utilized for planned educational activities, which include a scheduled lab time, course syllabus, and instructional objectives and activities. Lab activities include a variety of instructional methods such as teaching clinical skills, testing, practice scanning, case review, individual and group projects, and practice with ultrasound simulators. Tutoring and extra practice scanning time can be arranged and scheduled through the lab instructor.

The medical ultrasound equipment located in the lab is complex, delicate, and expensive. Transducers that are dropped or mishandled are subject to breakage. Broken transducers cannot be repaired and must be replaced. Electrical cords, including transducer cords, that are pulled too tightly or caught under rolling wheels can wear; and can be a potential electrical hazard to the operator. It is each student's responsibility to handle all equipment in the lab carefully in accordance with instructions and training provided by the lab instructor.

Scanning in the ultrasound lab is an integral part of the educational process designed to help students learn necessary beginning scanning skills that they will continue to develop and improve during the integrated clinical and clinical externship courses. Students spend some of their lab time scanning each other under the direct supervision and direction of their lab instructor.

The ultrasound lab is a simulated work environment. Students must learn and follow best practices for a medical environment while they are in the lab. Food and drink are never allowed in the ultrasound lab.

Students in the ultrasound lab are expected to:

- understand the objectives and requirements for each lab and/or scanning session
- ask questions at appropriate times whenever necessary
- follow directions given by the instructor during lab
- set up the scanning station prior to beginning scanning, including making sure the transducer and scanning bed are clean
- wash hands before and after scanning
- wear a disposable glove on the scanning hand
- make sure the lab partner being scanned is comfortable, provided privacy, and correctly draped
- clean the transducer and scanning station when finished scanning
- straighten up the lab before leaving; including straightening up chairs, tables, and other areas used during the lab
- respect fellow classmates' privacy and confidentiality regarding any personal information disclosed during lab
- treat students and instructors with courtesy and respect

Student Consent

Students must sign and date a consent form prior to their first scheduled lab class. This consent form is kept on file, and is in effect for the duration of their educational program. Students have the right to refuse to be scanned in lab for any reason. Instructors may also decide if it is not appropriate for a particular student to be scanned for specific labs, depending on the educational objectives.

Ultrasound program students who refuse or may not be scanned must make arrangements for a substitute live model or models to be scanned in their place. The substitute live model will be scanned by the refusing student's lab partner.

Substitute live models:

- may not be DMS students.
- are subject to approval by the lab instructor.
- must sign a consent form prior to being scanned. This consent form is kept on file; and must clearly state that the scan is being performed for educational purposes only, and not for medical information or diagnosis.
- who are not PCI students may participate in a maximum of two lab classes.
- may be students enrolled in other programs at the school on a volunteer basis. These students may be scanned only once during their enrollment; and their participation as a live student model volunteer must not interfere with their classes or other program responsibilities.
- may be friends or family members.
- must not be pregnant.
- must be 18 years or older. Children are never scanned in the lab.

Students who refuse or may not be scanned are still responsible for participating in lab and meeting all requirements for successful completion of the course as described in the course syllabus.

Compliance with Principles of ALARA (As Low As Reasonably Achievable) in the Lab

The medical ultrasound community endorses compliance with principles of ALARA. Principles of ALARA in the ultrasound lab include

- keeping scanning time to a minimum
- keeping energy outputs as low as possible while scanning
- keeping ultrasound exposure to the fetus to an absolute minimum

Principles of ALARA are incorporated into lab activities through the following required procedures:

- Pregnant ultrasound program students are not scanned in OB or GYN labs.
- Students are responsible for setting and monitoring machine controls (i.e. power, intensity, mechanical index, thermal index) to make sure they are keeping energy outputs as low as possible while scanning.
- Students may only use Doppler controls when instructed to do so by the lab instructor.

This policy for ultrasound labs is effective immediately. Students are expected to comply with the policy and accompanying procedures in order to maintain a safe and effective lab learning environment.

I have read and agree to comply with this policy for the ultrasound lab.

Student name (print) _____

Student signature _____ Date _____

ULTRASOUND LAB POLICY

Lab is a very important component of your education in the Diagnostic Medical Sonography program, if not the most important.

Each student should alternate machines and scan subjects. It is important to know how to operate every machine and learn how to scan on every type of body habitus.

If a problem arises we will make a schedule.

If a student arrives late to class you must not expect a classmate to change to a different machine you have not used.

Students must *sign* a waiver to allow themselves to be scanned. Volunteers must sign a waiver to allow themselves to be scanned.

In the beginning of each segment (organ, structure) you will be given a packet that includes an explanation of the overall imaging techniques, homework, and protocol of each organ.

You must obtain ultrasound images of each organ protocol that is covered in lab. It is very important to utilize your lab time wisely. You have homework that must be done during lab time.

Homework is usually due the day of the lab exam or prior to the test date. There will be a deduction of points if your homework is not turned in on the due date.

Have a folder to keep images in; you are responsible for your own images. If you miss a test, you must make it up at the instructor's available time not during class time.

It is your responsibility to find a scan partner for you to scan for your exam.
Attendance in lab is extremely important.

Points will be deducted for missed lab time.



DMS Master Plan for Clinical Education

Integrated Clinical Courses: 10 weeks in length and 229 hours of clinical education are required for each term.

Clinical courses are:

DMS 220 Introduction to Clinical
DMS 230 Clinical Education I
DMS 240 Clinical Education II
DMS 250 Clinical Education III
DMS 234 Clinical Education IV

For each course, students are generally assigned to the clinical site for 24 hours per week for 10 weeks, during the day Monday, Wednesday, Friday/Saturday or Tuesday, Thursday, Friday/Saturday. Clinical education starts in the students second year and is one year in duration.

Students are required to have a medical exam, to include a 2 step TB, CPR, Criminal background check, Child abuse clearance, FBI fingerprinting and acknowledgement of school policies (medical release, confidentiality, HIPAA policy, blood borne pathogen, etc.) prior to starting their clinical.

Students are required to fill out their time sheet daily and have the clinical instructor (or other personnel approved by the clinical instructor) sign the form and fax them on Friday or Saturday of each week. Timesheets (original) will be collected on Mondays/Tuesdays during scheduled class time.

Students must call the site and the clinical coordinator if they are going to be absent from clinical. Failure to call both parties will result in a write up and a repeated offense may result in removal from the site.

If a student calls off or leaves the clinical site early they must make up those hours. Hours must be made up in ½ hour (30 min.) increments or more. If you are making up hours on a non-scheduled clinical day, you must get permission from the clinical instructor at your site to approve the make-up day.

Students must attend 100% of their clinical hours. Failure to complete required hours at the end of term will result in an “F” for clinical. The student must make up those hours before proceeding to the next clinical course.

Clinical evaluations from the clinical instructor are due every month (2 per term).

Grades are based on attendance, evaluations, site visits and assigned clinical paperwork (protocols, competencies, etc.)

Students who attend a dedicated vascular lab for a given term or have vascular included in the general ultrasound department should attempt to comp out on a venous, arterial and carotid competency.

Students that do not have sufficient gynecological and/or obstetrical exams offered at their site will rotate through a dedicated ob/gyn clinical site.

Required Competencies: Equipment, 1st, 2nd and 3rd Trimester OB; Liver, Biliary, Pancreas, Renals, Spleen, Abdominal Vascular (Aorta, IVC), Abdomen Complete; Abdominal Doppler, GYN (transvaginal and transabdominal); Thyroid , Scrotum and Non-Cardiac Chest

Elective Competencies: Biophysical Profile; Guided Fluid Aspiration/Drainage; Male Pelvis (transabdominal); Upper or Lower Arterial Doppler; Upper or Lower Venous Doppler; Carotid, Breast, Musculoskeletal; Guidance/Biopsy; Amniocentesis; and Gastrointestinal

Students are required to learn the protocols at their clinical site, then complete a protocol for the following: 1st, 2nd and 3rd Trimester OB; Liver, Biliary, Pancreas, Renals, Spleen, Abdominal Vascular (Aorta, IVC), Abdomen Complete; GYN (transvaginal and transabdominal); Thyroid and Scrotum. Although, technologists may assist the student with the machine controls, technique, etc., the student must know what images are required for that exam.

After the student has completed a protocol, they must practice at least 3 times (form must be dated and initialed) before attempting a competency. Students are allowed to attempt a competency more than once.

Competencies available for each course are marked with an “X” on the table below.

DMS 220: All students are required to complete the Equipment Operation (Basic) competency.

DMS 230: Students must complete the three competencies marked with “X”.

DMS 240: Students must complete the 5 competencies marked with “X”.

DMS 250: Students must complete 5 competencies marked with “X”.

Each student will have all 17 required competency evaluations completed by the end of DMS 234.

GYN/OB competencies may be submitted in place of required competencies for any given term, when a student attends a dedicated Ob/Gyn site in that term.

Students may complete competencies before a designated term.

| | Equip Operation | Abd. Vessels | Liver | GB - Biliary | Spleen | Renals | Pancrea | Abdomen Complete | Abdominal Doppler | Thyroid | Scrotum | GYN (trans-abdominal) | GYN (trans-vaginal) | OB 1 st Trim | OB 2 nd Trim | OB 3 rd Trim | Non Cardiac Chest |
|---|-----------------|--------------|-------|--------------|--------|--------|---------|------------------|-------------------|---------|---------|-----------------------|---------------------|-------------------------|-------------------------|-------------------------|-------------------|
| DMS 220 Introduction to Clinical Education | X | | | | | | | | | | | | | | | | |
| DMS 230 Clinical Education I | | X | X | X | | | | | | | | | | | | | |
| DMS 240 Clinical Education II | | | | | X | X | X | | | X | | X | | | | | |
| DMS 250 Clinical Education III | | | | | | | | x | x | | X | | X | | | | x |
| DMS 234 Clinical Education IV | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x |

DMS Program Competency List

| Required | Elective |
|------------------------------|------------------------------------|
| 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) | |
| 1 st Trimester OB | |
| 2 nd Trimester OB | **Guidance/Biopsy |
| 3 rd Trimester OB | **Amniocentesis |
| Scrotum | Gastrointestinal |
| Thyroid | Adrenals |
| Non-Cardiac Chest | Prostate |
| Abdominal Doppler | |

**Invasive Procedures

Student Name _____

Directions: Students will use this form to keep track of protocols and competencies that have been completed.
Record in the date completed in the appropriate block.

Students will complete all 17 required competencies, and 2 or more out of the elective competencies, by the completion of DMS 234.

| Check protocols and competencies completed for each course. | DMS 220 Intro to Clinical Education | DMS 230 Clinical Education I | DMS 240 Clinical Education II | DMS 250 Clinical Education III | DMS 234 Clinical Education IV |
|---|--|---------------------------------|----------------------------------|-----------------------------------|----------------------------------|
| REQUIRED | | | | | |
| Equipment Operation Competency (Basic) | | | | | |
| Liver protocol | | | | | |
| GB/Biliary protocol | | | | | |
| Pancreas protocol | | | | | |
| Spleen protocol | | | | | |
| Kidneys protocol | | | | | |
| Aorta protocol | | | | | |
| Liver Competency | | | | | |
| GB/Biliary Competency | | | | | |
| Pancreas Competency | | | | | |
| Spleen Competency | | | | | |
| Kidneys Competency | | | | | |
| Aorta Competency | | | | | |
| Abdomen Complete Competency | | | | | |
| Abdominal Doppler | | | | | |
| GYN transabdominal protocol | | | | | |
| GYN transabdominal competency | | | | | |
| GYN transvaginal protocol | | | | | |
| GYN transvaginal competency | | | | | |
| Thyroid protocol | | | | | |
| Thyroid competency | | | | | |

| | | | | | |
|---|-------------|-------------|-------------|-------------|--------------------|
| Scrotum protocol | | | | | |
| Scrotum competency | | | | | |
| Non-Cardiac Chest | | | | | |
| | | | | | |
| 1 st Trimester Ob protocol | | | | | |
| 1 st Trimester Ob competency | | | | | |
| 2 nd Trimester OB protocol | | | | | |
| 2 nd Trimester OB competency | | | | | |
| 3 rd Trimester OB protocol | | | | | |
| 3 rd Trimester OB competency | | | | | |
| | OB Rotation | OB Rotation | OB Rotation | OB Rotation | OB Rotation |
| ELECTIVE | | | | | |
| Biophysical Profile | | | | | |
| **Guided Fluid Aspiration/Drainage | | | | | |
| Male Pelvis (transabdominal) | | | | | |
| Breast | | | | | |
| Carotid | | | | | |
| Upper or Lower Arterial Doppler | | Vascular | Rotation | | |
| Upper or Lower Venous Doppler | | | | | |
| Musculoskeletal | | | | | |
| **Guidance/Biopsy | | | | | |
| **Amniocentesis | | | | | |
| Abdominal Doppler | | | | | |
| Adrenals | | | | | |
| Prostate (transrectal) | | | | | |

Variations are allowed according to the clinical site and types of studies offered at the clinical site. For example: Ob/Gyn rotation will substitute those protocols/competencies required for that term.
 ** May acquire with assistance

PCI - PITTSBURGH CAREER INSTITUTE

INTEGRATED / EXTERNSHIP TIMESHEET

Program:

| | | | | |
|------------|------------|-----------|-----------|-----------|
| MBC | DMS | RT | DT | PT |
| MA | DA | MT | VT | ST |

Student Name: _____ Clinical Site: _____

Student Phone: _____ Clinical Super: _____

Student ID: _____ Phone Number: _____

Week Ending: _____ Course Code: _____

General Instructions

1. For shifts greater than 4-1/2 hrs, you must take a minimum 30 minute meal break. A maximum of 30 minutes break time can be counted towards the total clinical hours for the day. Credit will not be given for more than 10 hours per day or 40 hours per week.
2. For each day of attendance, please include a brief description of duties performed.
3. Timesheet must be signed and dated by both the student and clinical site personnel
4. Fax Timesheet each Friday/Saturday to (412) 209-0479 before 5pm.

| Day | Dates | Time In | Lunch Out | Lunch In | Time Out | Total | General Duties Performed |
|------------------|-------|---------|-----------|----------|----------|-------|--------------------------|
| Monday | | | | | | | |
| Tuesday | | | | | | | |
| Wednesday | | | | | | | |
| Thursday | | | | | | | |
| Friday | | | | | | | |
| Saturday | | | | | | | |
| Sunday | | | | | | | |

| | |
|--------------------|--|
| Total Hours | |
|--------------------|--|

Student Signature:

Date

Clinical Site Supervisor Signature

Date

Time Checked for Accuracy and Recorded:

BY

Date



Diagnostic Medical Sonography Program
Competency Evaluation—**Required**
Liver

Student's Name _____ Student ID: _____ Date _____

Clinical Site _____ Evaluator _____

The student will practice the procedure at the clinical site until he or she is ready to be evaluated by the Clinical Evaluator. A student may practice and repeat a failed competency only once. The Clinical Evaluator will place an X in the appropriate box for each skill item.

Scoring Rubric:

- 3 = meets all requirements for this item at an acceptable level. (A)
- 2 = meets almost all requirements for this item at an acceptable level. (B)
- 1 = some minor adjustments were needed in some areas. (C)
- 0 = student was not able to perform this skill or major adjustments were needed. (F)
- N/A = Non Applicable

| Skill: Liver | 3 | 2 | 1 | 0 | N/A | COMMENTS |
|---|---|---|---|---|-----|----------|
| Correctly set up patient and equipment prior to scanning. | | | | | | |
| Communicated appropriately with the patient before, during, and after the exam. | | | | | | |
| Scanned anatomy in a systematic manner following department protocol, recording required images. | | | | | | |
| Correctly identified and documented the left lobe and caudate lobe in longitudinal and transverse planes. | | | | | | |
| Correctly identified and documented the right lobe and porta hepatis in longitudinal and transverse planes. | | | | | | |
| Correctly identified and documented the hepatic vessels in longitudinal and transverse planes. | | | | | | |
| Correctly identified and documented hepatic ligaments and fissures in longitudinal and transverse planes. | | | | | | |
| Labeled images correctly. | | | | | | |
| Utilized adjustments in patient position, transducer manipulation, and equipment controls to improve images while scanning. | | | | | | |
| Recognized normal sonographic anatomy and tissue patterns. | | | | | | |
| Identified areas of interest (AOI). Measurements, if included, were accurate. | | | | | | |
| Total each column: | | | | | | |

Clinical Evaluator Signature _____ Date _____

Student Signature _____ Date _____

Pittsburgh Career Institute – Clinical Journal

Thyroid
Journal #2

NAME _____

CLINICAL SITE: _____

DATE: _____

1. List and define 2 medical terms you learned or were used at clinical.

2. What lab tests and values indicate thyroid problems?

3. What signs/symptoms did the patient exhibit?

4. Describe the sonographic appearance of the thyroid you scanned (include measurements):

5. What diagnosis was the exam consistent with? _____

6. What other imaging modalities does your clinical site use to evaluate the thyroid?

7. Does your clinical site perform lymph node mapping? _____

LIVER PROTOCOL EVALUATION

STUDENT'S NAME _____ **DATE** _____

CLINICAL SITE _____

CLINICAL EVALUATOR _____

| <u>Patient Care Skills</u> | Met Expectations | Did not meet Expectations |
|---|-------------------------|----------------------------------|
| Did the student properly greet the patient? | | |
| Did the student obtain proper patient identification? | | |
| Did student take a proper history? | | |
| Did student verify script/orders? | | |
| Did student give the patient proper instructions? (how to lie, breath, etc.?) | | |
| Did the student conclude the exam with the patient? | | |

| <u>Procedure Skills</u> | Met Expectations | Did not meet Expectations |
|------------------------------------|-------------------------|----------------------------------|
| Longitudinal Images: | | |
| Left Lobe | | |
| Right Lobe | | |
| Measure correctly? | | |
| Transverse Images: | | |
| Left Lobe | | |
| Right Lobe | | |
| Additional Images/views | | |
| Doppler: | | |
| Use pulsed wave Doppler correctly? | | |
| Use color flow Doppler correctly? | | |

| <u>Technique</u> | Met Expectations | Did not meet Expectations |
|--|-------------------------|----------------------------------|
| Did the student use the appropriate transducer? | | |
| Did the student position the patient correctly? | | |
| Did student make appropriate instrumentation adjustments? (gain, depth, frequency, etc.) | | |
| Did student verify script/orders? | | |
| The exam table and room were properly set up for exam? | | |
| Student disinfected transducer and cleaned room | | |

Pathology

Was there any pathology seen? Yes No

If yes, did the student correctly identify the pathology? Yes No

If no, please explain

Additional Comments

Do you feel there is any area(s) that the student requires extra help or information? Yes No

If yes, please specify

**Any additional
comments?**

Clinical Instructor's Signature

Date _____

Student's comments:

Student's Signature

Date _____

SYLLABUS

PART A: COURSE INFORMATION

| | | | | | | |
|--|---|-------------------------|----------------|--|-------------------|--|
| COURSE NUMBER: | DS-110 | | | | | |
| COURSE TITLE: | INTRODUCTION TO ULTRASOUND | | | | | |
| CREDIT/CLOCK HOURS: | 2.5 | SEMESTER CREDITS | | | | |
| | | QUARTER CREDITS | | | | |
| | 40 | CLOCK HOURS | | | | |
| | | 40 | LECTURE | | LABORATORY | |
| COURSE LENGTH: | 10 | WEEKS | | | | |
| PREREQUISITES: | GS-100A; GS-211; PHY-113; AND ALH-166 | | | | | |
| CO-REQUISITES: | NONE | | | | | |
| COURSE DESCRIPTION: | <p>This course is designed to provide the student with an overview of the theoretical, clinical and ethical aspects of ultrasound. The student will have the opportunity to familiarize themselves with ultrasound related topics including: history, physics cross-sectional anatomy, elementary scan interpretation and sonographic terms. The student is introduced to the laboratory and the various ultrasound machines.</p> | | | | | |
| PERFORMANCE OBJECTIVES / LEARNING OUTCOMES: | <ul style="list-style-type: none"> • Describe the evolution of Ultrasound, inventors and their discoveries. • Identify the role of the Student as a Sonographer • Discuss the value of professional organizations. • Comprehend different types of Sonography and Identify advancement opportunities for the Sonographer. • Apply proper instrumentation of laboratory ultrasound equipment. • Interpret basic gray-scale imaging; students will be introduced into the lab. • Recognizing the sonographic appearance, demonstrate the proper scanning techniques of the Aorta and IVC and their branches • Comprehension of abdominal vascular anatomy with emphasis on the aorta, IVC and portal system | | | | | |

SYLLABUS

PART B: CLASS SECTION DETAILS

| | |
|-------------------------|--|
| TERM/MODULE: | |
| COURSE TITLE: | INTRODUCTION TO ULTRASOUND |
| COURSE NUMBER: | DS-110 |
| CLASS SECTION: | |
| CLASS DATES: | |
| CLASS SCHEDULE: | |
| DELIVERY METHOD: | <input checked="" type="checkbox"/> RESIDENTIAL <input type="checkbox"/> BLENDED <input type="checkbox"/> ONLINE <i>(double-click checkbox to select)</i> |

| INSTRUCTOR INFORMATION: | |
|--------------------------------|--|
| NAME: | |
| EMAIL: | |
| PHONE NUMBER: | |
| OFFICE HOURS: | BY APPOINTMENT |
| OFFICE LOCATION: | 2ND FLOOR |
| ADDITIONAL INFO: | <p>Make Up Work: Students may seek approval from the course instructor to make up work missed during an absence. Make-up work is allowed under certain circumstances, and students are responsible for arranging to make up class work missed due to absence. Students should make every effort to discuss make up work with their instructor prior to any absences or missed assignments, if at all possible. Eligibility for makeup work is the decision of the instructor and is not guaranteed. Students are expected to complete exams on the day they are given. Should an exam be missed, the student must provide the instructor appropriate documentation to make up the exam. Examples of appropriate documentation include doctor excuses and legal notices. The exam must be made up within one week of the date the exam was initially given. Quizzes cannot be made up. Time spent on completion of the make-up work will not be counted toward class attendance. There will be no fees or charges incurred by the student for make-up work.</p> |
| CLASS NOTES: | |

Instructional Methods:

Lecture, classroom discussions and projects, handouts, reading assignments, presentations, writing assignments, group work/cases.

| | | | | | | | |
|------------------------------|---|----------------------|----------------------|-----------------------------|------------------------------|----------------------------|-----------------|
| LEARNING ACTIVITIES: | The table below represents an estimated time-on-task for each type of learning activity to be completed both in and out of class (i.e. hours per activity type per week). Individual learning times may vary based on previous knowledge, learning style/ability, course difficulty, personal motivation, or other factors. Consequently, this table provides a quantitative measurement of the expected average amount of time/work required to complete the course and should not be used as a qualitative assessment of overall student performance. | | | | | | |
| | Week | Clinical or Lab Work | Discussion/ Analysis | Interactive Media/ Software | Problem-solving/ Assessments | Reading/Research / Writing | Activity Totals |
| | 1 | 7 Hours | 9 Hours | 2 Hours | 2 Hours | 6-8 Hours | 16-18 Hours |
| | 2 | 7 Hours | 9 Hours | 2 Hours | 2 Hours | 6-8 Hours | 16-18 Hours |
| | 3 | 7 Hours | 9 Hours | 2 Hours | 2 Hours | 6-8 Hours | 16-18 Hours |
| | 4 | 7 Hours | 9 Hours | 2 Hours | 2 Hours | 6-8 Hours | 16-18 Hours |
| | 5 | 7 Hours | 9 Hours | 2 Hours | 2 Hours | 6-8 Hours | 16-18 Hours |
| Totals | 35 Hours | 45 Hours | 10 Hours | 10 Hours | 30-40 Hours | 80- 90 Hours | |
| METHOD OF EVALUATION: | Student performance will be evaluated by the following means of assessment: | | | | | | |
| | Tests | | | | | 80% | |
| | Quizzes, Homework and Library Assignments | | | | | 20% | |
| | TOTAL | | | | | 100% | |

| | | | |
|-----------------------|----------------|---------------------|-----------------------|
| GRADING SCALE: | Grade | Grade Points | Percentage |
| | A | 4.0 Excellent | 90 - 100 |
| | B | 3.0 Good | 80 – 89 |
| | C | 2.0 Average | 75 – 79 |
| | F | 0.0 Failure | Below 75 |
| | AU | Audit | I Incomplete |
| | P | Pass | PR Proficiency |
| | TC | Transfer Credit | W Withdraw |
| WP | Withdraw – LOA | NP Not Pass | |

Library Assignment(s):

As assigned by the instructor. Research papers and projects should involve both library research and the use of reference material that is properly documented. Directions for the paper or project should be left on file so that the Librarian and/or tutors may assist students with their research; students requiring additional assistance should be encouraged to speak with the instructor at their earliest convenience.

Portfolio Assignment:

Program portfolios are a recommended and demonstrable means for assessing student competencies. Each student should select a project or paper from this course that best demonstrates his/her proficiencies with the material presented. Each student should then review and assess the chosen project or paper with the course instructor, revise it as needed, and add it to his/her program portfolio.

Course Policies**Reasonable Accommodations Policy**

PCI does not discriminate against individuals on the basis of physical or mental disability and is fully committed to providing reasonable accommodations, including appropriate auxiliary aids and services, to qualified individuals with a disability, unless providing such accommodations would result in an undue burden or fundamentally alter the nature of the relevant program, benefit, or service provided by the Pittsburgh Career Institute. To request an auxiliary aid or service, please contact the Director of Compliance or the Director of Education at 421 Seventh Ave, Pittsburgh, PA 15219.

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% 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 may earn a failing grade on their transcripts and may be required to repeat 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". The course must be repeated in its entirety.
3. Externships: Students are required to complete 100% of their clinical/externship hours. If students miss any externship time, arrangements for make-up time must be made with the externship site supervisor. Students will not be considered to have completed their externships until the site supervisor has certified all required attendance hours.

For students who are receiving veterans' benefits, the Department of Veterans Affairs will be notified whenever students are placed on attendance probation or are terminated for failure to meet attendance requirements. The Department of Veterans Affairs will also be notified if a student re-enters following such termination. NOTE: Terminated VA students are not re-admitted into their program of study for a minimum of one grading period.

Please see the catalog and/or catalog addendum for the most current policies, procedures, and general information related to this course.

TOPICAL OUTLINE:

| WEEK | DESCRIPTION OF CONTENT | |
|------|---|--|
| 1 | <ul style="list-style-type: none"> • a disease that is short term • using a stethoscope to listen to body cavities and organs • naming a disease • the cause of a disease • a disease acquired from the hospital environment • directed toward relief of symptoms, does not cure • feeling lightly or by pressing firmly on an internal organ • caused by a pathogen or a disease • what the patient reports as their problem • the quality of being mortal or destined to die | <ul style="list-style-type: none"> • CHAPTER 1 WORKBOOK • COMPLETE ASSIGNED CHAPTER EXERCISES AND HANDOUTS |
| 2 | <ul style="list-style-type: none"> • disease that is present at birth • invasion of microorganisms into tissue that causes cell or tissue injury • new growth, an increase in cell number • deadly or progressing to death • the state when the immune response is too intense or hypersensitive • a malignant tumor • a change in structure or function within the body • moves from a site of origin to another secondary site in the body • a disease that is short term • a physical or mental injury | <ul style="list-style-type: none"> • CHAPTER 2 WORKBOOK • COMPLETE ASSIGNED CHAPTER EXERCISES AND HANDOUTS |

| | | |
|--------------------------------------|---|--|
| <p style="text-align: center;">3</p> | <ul style="list-style-type: none"> • HAVING LIMITED GROWTH • AN ILL, THIN, WASTED APPEARANCE • STUDY OF CELLS • A LARGE TUMOR OR SWELLING FILLED WITH BLOOD • DEADLY OR PROGRESSING TO DEATH • SPREADING TO DISTANT SITES • NEW GROWTHS • DIRECTED TOWARD RELIEF OF SYMPTOMS • SOMETHING THAT REDUCES RISK • SWELLING OR GROWTH | <ul style="list-style-type: none"> • CHAPTER 3 WORKBOOK • COMPLETE ASSIGNED CHAPTER EXERCISES AND HANDOUTS |
| <p style="text-align: center;">4</p> | <ul style="list-style-type: none"> • MICROSCOPIC ONE-CELLED ORGANISMS • INJURY • INCREASED BLOOD • PARTS OF TISSUE THAT CLING TO THE SURFACE OF ADJOINING ORGANSAS NORMAL FIBROUS SCAR TISSUE • PERSPIRATION SECRETING • MICROORGANISMS IN THE BLOOD; BLOOD POISONING • DEATH OF NUMEROUS NEUTROPHILS MIXED WITH EXUDATES OR BLOOD FLUID THAT MAKE UP, IN PART, THE WHITE FLUID • DISCONTINUITY OF TISSUE • DRIED FIBRINOUS EXUDATE • EXUDATE THAT IS LOADED WITH DEAD AND DYING PMNS OR NEUTROPHILS; TISSUE DEBRIS | <ul style="list-style-type: none"> • CHAPTER 4 WORKBOOK • COMPLETE ASSIGNED CHAPTER EXERCISES AND HANDOUTS |

| | | |
|----------|---|--|
| <p>5</p> | <ul style="list-style-type: none"> • THE STATE WHEN THE IMMUNE RESPONSE IS TOO INTENSE OR HYPERSENSITIVE TO AN ENVIRONMENTAL SUBSTANCE • RELATING TO THE BACTERIAL ORGANISM STREPTOCOCCUS • SOMETHING THAT WORKS TO PREVENT • MUSCULAR CONSTRICTION OF THE BRONCHI OF THE RESPIRATORY TRACE • THE ENVIRONMENTAL SUBSTANCE THAT CAUSES A REACTION | <ul style="list-style-type: none"> • CHAPTER 5 WORKBOOK • COMPLETE ASSIGNED CHAPTER EXERCISES AND HANDOUTS |
|----------|---|--|

Master Course Outline

Diagnostic Medical Sonography

| COURSE NUMBER | COURSE TITLE | CLOCK HOURS | SEMESTER CREDITS |
|-------------------------------------|---|----------------|---------------------|
| Core Curriculum Requirements | | | |
| AH-135 | Medical Terminology | 40 | 2.5 |
| ALH-166 | Human Anatomy and Physiology - All Body Systems | 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 Obstetric 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 | 40 | 2.5 |

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. If you have questions about any of this organizations please speak with your Diagnostic Medical Sonography program director or faculty members.

ACCREDITATION/WEBSITES:

Commission on Accreditation of Allied Health Education Programs (CAAHEP)
1361 Park Street
Clearwater, Florida 33756
(727) 210-2350.
www.CAAHEP.org

Joint Review Committee on Education in Diagnostic Medical Sonography (JRC-DMS)
6021 University Boulevard Suite 500
Elliott City, MD 21043
Tel: 866.738.344
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

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
American Institute of Ultrasound in Medicine
14750 Sweitzer Lane, Suite 100
Laurel, MD 20707
Tel: 301.498.4100
www.AIUM.org

Standards and Guidelines

for the Accreditation of Educational Programs in Diagnostic Medical Sonography

Essentials/Standards initially adopted in 1979; revised in 1987, 1996, 2007, and 2011 by the:

*American College of Cardiology Foundation
American College of Radiology
American College of Obstetricians and Gynecologists
American Institute of Ultrasound in Medicine
American Society of Echocardiography
American Society of Radiologic Technologists
Society of Diagnostic Medical Sonography
Society for Vascular Surgery
Society for Vascular Ultrasound
Joint Review Committee on Education in Diagnostic Medical Sonography
and
Commission on Accreditation of Allied Health Education Programs*

The Commission on Accreditation of Allied Health Education Programs (CAAHEP) accredits programs upon the recommendation of the Joint Review Committee on Education in Diagnostic Medical Sonography (JRC-DMS).

These accreditation **Standards and Guidelines** are the minimum standards of quality used in accrediting programs that prepare individuals to enter the Diagnostic Medical Sonography profession. Standards are the minimum requirements to which an accredited program is held accountable. Guidelines are descriptions, examples, or recommendations that elaborate on the Standards. Guidelines are not required, but can assist with interpretation of the Standards.

Standards are printed in regular typeface in outline form. *Guidelines* are printed in italic typeface in narrative form.

Preamble

The Commission on Accreditation of Allied Health Education Programs (CAAHEP), Joint Review Committee on Education in Diagnostic Medical Sonography (JRC-DMS), and the American College of Cardiology, American College of Radiology, American College of Obstetricians and Gynecologists, American Institute of Ultrasound in Medicine, American Society of Echocardiography, American Society of Radiologic Technologists, Society of Diagnostic Medical Sonography, Society for Vascular Surgery, and Society for Vascular Ultrasound cooperate to establish, maintain and promote appropriate standards of quality for educational programs in Diagnostic Medical Sonography and to provide recognition for educational programs that meet or exceed the minimum standards outlined in these accreditation **Standards and Guidelines**. Lists of accredited programs are published for the information of students, employers, educational institutions and agencies, and the public.

These **Standards and Guidelines** are to be used for the development, evaluation, and self-analysis of diagnostic medical sonography programs. On-site review teams assist in the evaluation of a program's relative compliance with the accreditation Standards.

Description of Profession

The profession of diagnostic medical sonography includes general sonography, cardiac sonography, vascular technology, and various subspecialties. The profession requires judgment and the ability to provide appropriate health care services. General sonographers, adult cardiac sonographers, pediatric cardiac sonographers, and vascular technologists are highly skilled professionals qualified by education to provide patient services using diagnostic techniques under the supervision of a licensed doctor of medicine or osteopathy. The general sonographer, adult cardiac sonographer, pediatric cardiac sonographer, and vascular technologist may provide this service in a variety of medical settings where the physician is responsible for the use and interpretation of appropriate procedures.

General sonographers, adult cardiac sonographers, pediatric cardiac sonographers, and vascular technologists assist physicians in gathering data necessary to reach diagnostic decisions.

The general sonographer, adult cardiac sonographer, pediatric cardiac sonographer, and vascular technologist are able to perform the following:

- Obtain, review, and integrate pertinent patient history and supporting clinical data to facilitate optimum diagnostic results;
- Perform appropriate procedures and record anatomic, pathologic, and/or physiologic data for interpretation by a physician;
- Record, analyze, and process diagnostic data and other pertinent observations made during the procedure for presentation to the interpreting physician;
- Exercise discretion and judgment in the performance of sonographic and/or other diagnostic services;
- Demonstrate appropriate communication skills with patients and colleagues;
- Act in a professional and ethical manner;
- Provide patient education related to medical ultrasound and/or other diagnostic vascular techniques, and promote principles of good health.

The four learning concentrations are:

1. General (Defined as abdomen, obstetric, gynecologic, superficial parts, and other appropriate areas)
2. Adult Echocardiography (including adult congenital)
3. Pediatric Echocardiography (including adult congenital and fetal)
4. Vascular

I. Sponsorship

A. Sponsoring Institution

A sponsoring institution must be at least one of the following:

1. A post-secondary academic institution accredited by an institutional accrediting agency that is recognized by the U.S. Department of Education, and authorized under applicable law or other acceptable authority to provide a post-secondary program, which awards a minimum of a certificate at the completion of the program.
2. A hospital or medical center or other governmental medical service, which is accredited by a healthcare accrediting agency or equivalent that is recognized by the U.S. Department of Health and Human Services, and authorized under applicable law or other acceptable authority to provide healthcare, which awards a minimum of a certificate at the completion of the program.
3. A branch of the United States Armed Forces, which awards a minimum of a certificate at the completion of the program.

B. Consortium Sponsor

1. A consortium sponsor is an entity consisting of two or more members that exists for the purpose of operating an educational program. In such instances, at least one of the members of the consortium must meet the requirements of a sponsoring institution as described in I.A.
2. The responsibilities of each member of the consortium must be clearly documented as a formal affiliation agreement or memorandum of understanding, which includes governance and lines of authority.

C. Responsibilities of Sponsor

The Sponsor must assure that the provisions of these *Standards and Guidelines* are met.

II. Program Goals

A. Program Goals and Outcomes

There must be a written statement of the program's goals and learning domains consistent with and responsive to the demonstrated needs and expectations of the various communities of interest served by the educational program. The communities of interest that are served by the program must include, but are not limited to, students, graduates, faculty, sponsor administration, employers, physicians, and the public.

Program-specific statements of goals and learning domains provide the basis for program planning, implementation, and evaluation. Such goals and learning domains must be compatible with both the mission of the sponsoring institution(s), the expectations of the communities of interest, and nationally accepted standards of roles and functions. Goals and learning domains are based upon the substantiated needs of health care providers and employers, and the educational needs of the students served by the educational program.

B. Appropriateness of Goals and Learning Domains

The program must regularly assess its goals and learning domains. Program personnel must identify and respond to changes in the needs and/or expectations of its communities of interest.

An advisory committee, which is representative of at least each of the communities of interest named in these **Standards**, must be designated and charged with the responsibility of meeting at least annually, to assist program and sponsor personnel in formulating and periodically revising appropriate goals and learning domains, monitoring needs and expectations, and ensuring program responsiveness to change.

C. Minimum Expectations

The program must have the following goal(s) defining minimum expectations:

- "To prepare competent entry-level general sonographers in the cognitive (knowledge), psychomotor (skills), and affective (behavior) learning domains" and/or
- "To prepare competent entry-level adult cardiac sonographers in the cognitive (knowledge), psychomotor (skills), and affective (behavior) learning domains" and/or
- "To prepare competent entry-level pediatric cardiac sonographers in the cognitive (knowledge), psychomotor (skills), and affective (behavior) learning domains" and/or
- "To prepare competent entry-level vascular technologists in the cognitive (knowledge), psychomotor (skills), and affective (behavior) learning domains."

Programs adopting educational goals beyond entry-level competence must clearly delineate this intent and provide evidence that all students have achieved the basic competencies prior to entry into the field.

Nothing in this Standard restricts programs from formulating goals beyond entry-level competence.

III. Resources

A. Type and Amount

Program resources must be sufficient to ensure the achievement of the program's goals and outcomes. Resources must include, but are not limited to: faculty, clerical and support staff; curriculum; finances; offices; classroom, laboratory, and ancillary student facilities; clinical affiliates; equipment; supplies; computer resources, instructional reference materials, and faculty/staff continuing education.

1. Support Staff

- a. Support staff should be available to provide counseling or referral for problems that may interfere with the student's progress through the program. Guidance should be available to assist students in understanding course content and in observing program policies, and practices.

2. Clinical Resources

- a. Maximum student enrollment should be commensurate with the volume and variety of sonographic procedures, equipment, and personnel available for educational purposes. The number of students assigned to the clinical affiliate/clinical education center should be determined by a student/clinical staff ratio not greater than one-to-one, and a student/work station ratio of not greater than one-to-one.

- b. Programs should provide students with a variety of care settings in which sonographic and/or other diagnostic vascular procedures are performed on in-patients and outpatients. These settings may include the following: Ambulatory care facilities, Emergency/trauma, Intensive/critical/coronary care, Surgery, Angiography/cardiac catheterization

(1) Each general learning concentration affiliate or clinical education center should perform approximately 1500 completed patient examinations, including production of permanent records and reports, per year, per student equivalent. The overall volume of procedures in which students participate in throughout the program should include a minimum of 30% ob/gyn procedures and a minimum of 30% abdominal procedures.

(2) Each cardiac learning concentration affiliate or clinical education center should perform approximately 800 completed patient examinations, including permanent records and reports, per year, per student equivalent. The overall volume of procedures in which students participate in throughout the program should be representative of the range of cardiac procedures.

(3) Each pediatric cardiac learning concentration affiliate or clinical education center should perform approximately 150 completed transthoracic echocardiograms (at least 50 in infants age < 1 year), including permanent records and reports, per year, per student equivalent. In addition, each pediatric cardiac learning concentration should perform approximately 50 adult echocardiograms and 25 fetal echocardiograms.

(4) Each vascular learning concentration affiliate or clinical education center should perform approximately 1000 completed patient examinations, representative of the range of vascular procedures, including permanent records and reports, per year, per student equivalent. The overall volume of procedures in which students participate in throughout the program should be representative of the range of non-invasive vascular procedures.

A student equivalent is defined as equal to one full-time student for one year.

B. Personnel

The sponsor must appoint sufficient faculty and staff with the necessary qualifications to perform the functions identified in documented job descriptions and to achieve the program's stated goals and outcomes.

1. Program Director

a. Responsibilities

The program director must be responsible for the structure as well as the daily operation of the program, including organization, administration, periodic review and evaluation, continued development, and general effectiveness of program curricula. The program director must ensure that the effectiveness of all clinical affiliates/clinical education centers is maintained. The responsibilities of the program director must not be adversely affected by educationally unrelated functions.

b. Qualifications

The program director must:

- 1) be an appointed faculty member or institutional equivalent
- 2) possess a minimum of a Bachelor's Degree
- 3) have course work in instructional methodologies, evaluation and assessment
- 4) possess the appropriate credential(s) specific to one or more of the concentration(s) offered.
- 5) have proficiency in curriculum development

2. Clinical Resources

c. Maximum student enrollment should be commensurate with the volume and variety of sonographic procedures, equipment, and personnel available for educational purposes. The number of students assigned to the clinical affiliate/clinical education center should be determined by a student/clinical staff ratio not greater than one-to-one, and a student/work station ratio of not greater than one-to-one.

d. Programs should provide students with a variety of care settings in which sonographic and/or other diagnostic vascular procedures are performed on in-patients and outpatients. These settings may include the following: Ambulatory care facilities, Emergency/trauma, Intensive/critical/coronary care, Surgery, Angiography/cardiac catheterization

(5) Each general learning concentration affiliate or clinical education center should perform approximately 1500 completed patient examinations, including production of permanent records and reports, per year, per student equivalent. The overall volume of procedures in which students participate in throughout the program should include a minimum of 30% ob/gyn procedures and a minimum of 30% abdominal procedures.

(6) Each cardiac learning concentration affiliate or clinical education center should perform approximately 800 completed patient examinations, including permanent records and reports, per year, per student equivalent. The overall volume of procedures in which students participate in throughout the program should be representative of the range of cardiac procedures.

(7) Each pediatric cardiac learning concentration affiliate or clinical education center should perform approximately 150 completed transthoracic echocardiograms (at least 50 in infants age < 1 year), including permanent records and reports, per year, per student equivalent. In addition, each pediatric cardiac learning concentration should perform approximately 50 adult echocardiograms and 25 fetal echocardiograms.

(8) Each vascular learning concentration affiliate or clinical education center should perform approximately 1000 completed patient examinations, representative of the range of vascular procedures, including permanent records and reports, per year, per student equivalent. The overall volume of procedures in which students participate in throughout the program should be representative of the range of non-invasive vascular procedures.

2. Concentration Coordinator(s)

a. Responsibilities

Concentration coordinator(s) report(s) to the Program Director, and must be designated and responsible for the coordination of concentration(s) for which the Program Director does not possess the appropriate credential.

b. Qualifications

Concentration coordinator(s) must:

- 1) be an appointed faculty member or institutional equivalent;
- 2) possess an academic degree at least equivalent to the degree that is offered in the concentration(s) that s/he is designated to coordinate;
- 3) possess the appropriate credential(s) specific to the concentration(s) that s/he is designated to coordinate;
- 4) have proficiency in curriculum development;
- 5) possess a minimum of two years of full time experience as a registered sonographer in the professional sonography field. Full-time is defined as 35 hours per week.

3. Clinical Coordinator(s)

Programs with eight or more clinical affiliates / clinical education centers must have an additional faculty member designated as the clinical coordinator. For programs with fewer than eight clinical affiliates/clinical education centers that do not have an additional faculty member designated as the clinical coordinator, the Program Director must have the qualifications and fulfill the responsibilities of the Clinical Coordinator.

a. Responsibilities

The clinical coordinator(s) must be responsible for coordinating clinical education with didactic education as assigned by the program director. The clinical coordinator must evaluate and ensure the effectiveness of the clinical affiliate/clinical education centers. The clinical coordinator's responsibilities must include coordination, instruction, and evaluation. The responsibilities of the clinical coordinator must not be adversely affected by educationally unrelated functions.

b. Qualifications

The clinical coordinator(s) must possess, at a minimum, the following:

- 1) proficiency in teaching methodology, supervision, instruction, evaluation, and guidance;
- 2) appropriate credential(s) specific to the concentrations offered;
- 3) the equivalent of two years full-time professional experience as a general sonographer, cardiac sonographer, pediatric cardiac sonographer and/or vascular technologist. Full-time is defined as 35 hours per week; and
- 4) an academic degree no lower than an associate's degree and at least equal to that for which the graduates are being prepared.

The clinical coordinator should document experience as a clinical or didactic instructor in a general sonography, cardiac sonography, pediatric sonography and/or vascular technology program. The instructor experience may have been attained concurrently with the professional experience requirement.

4. Medical Advisor

a. Responsibilities

The medical advisor must provide guidance that the medical components of the didactic and clinical curriculum meet current acceptable performance standards.

b. Qualifications

The medical advisor must be a United States licensed physician, Board certified in a medical specialty related to at least one of the cardiac, vascular or general learning concentrations as applicable to the program's design.

The medical advisor should participate in goal determination, curriculum development and outcomes assessment. The medical director/advisor should participate in instruction.

5. Faculty and Instructional Staff

If the key personnel do not have all of the appropriate credentials for the learning concentrations offered, then there must be another faculty member with the appropriate credentials who will assume the didactic instruction and clinical evaluation responsibilities specific to that concentration.

All faculty must be familiar with program goals, be able to demonstrate the ability to develop an organized plan of instruction and evaluation, and have appropriate credentials for the learning areas they teach.

a. Didactic Instructor(s)

1) Responsibilities

The instructional staff must be responsible for providing didactic content, evaluating students, reporting progress, and for the periodic review and updating of course material.

2) Qualifications

The instructors must be individually credentialed if a credentialing examination is offered in the concentration that the instructor is teaching and the program is seeking initial or continuing accreditation in the concentration. They must also be qualified by education and experience, and be effective in teaching the subjects assigned.

b. Clinical Instructor(s)

A clinical instructor must be identified for each clinical affiliate/clinical education center.

1) Responsibilities

A clinical instructor must be available to students whenever he or she is assigned to a clinical setting, provide appropriate clinical supervision, and be responsible for student clinical evaluation. The program must provide a position description for a clinical instructor to carry out educational responsibilities.

2) Qualifications

Clinical instructors must have the appropriate credential for the concentration they are teaching.

C. Curriculum

The curriculum must ensure the achievement of program goals and learning domains. Instruction must be an appropriate sequence of classroom, laboratory, and clinical activities. Instruction must be based on clearly written course syllabi that include course description, course objectives, methods of evaluation, topic outline, and competencies required for graduation.

A desirable program-length goal for the core curriculum and one learning concentration, excluding requisites, is 18 months. Each additional learning concentration should encompass an additional six months of education.

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 and
- 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:

- e. Patient care
- f. Medical ethics and law
- g. Medical terminology and
- h. Pathophysiology

2. Master Plan

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 environments (ancillary equipment, thermal, central venous lines, ET tubes, respiratory needs)
- 3) Identify life-threatening situations and implement emergency care as permitted by 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
 - 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 endocavitary transducers, and Doppler display modes.

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

b. 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

b. 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

c. 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 application

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.

IV. Student and Graduate (Outcomes) Evaluation/Assessment

A. Student Evaluation

1. Frequency and purpose

Evaluation of students must be conducted on a recurrent basis and with sufficient frequency to provide both the students and program faculty with valid and timely indications of the students' progress toward and achievement of the competencies and learning domains stated in the curriculum.

The supervising sonographer/vascular technologist should be identified on all student clinical education records.

2. Documentation

Records of student evaluations must be maintained in sufficient detail to document learning progress and achievements.

Records indicating the number and type of procedures performed by the student, the examination findings, the extent of student supervision, and the level of involvement of the student in scanning/performance must be maintained and must document that all students meet the minimum numbers of procedures and types of procedures established by the program.

B. Outcomes

1. Outcomes Assessment

The program must periodically assess its effectiveness in achieving its stated goals and learning domains. The results of this evaluation must be reflected in the review and timely revision of the program.

Outcomes assessments include, but are not limited to: national credentialing examination performance, programmatic retention/attrition, graduate satisfaction, employer satisfaction, and job (positive) placement. The program must meet the outcomes assessment thresholds.

"Positive Placement" means that the graduate is employed full or part-time in a related field; and/or continuing his/her education, and/or serving in the military.

"National credentialing examinations" are those accredited by the National Commission for Certifying Agencies (NCCA) or American National Standards Institute (ANSI). Participation and pass rates on national credentialing examination(s) performance may be considered in determining whether or not a program meets the designated threshold, provided the credentialing examination(s), or alternative examination(s) offered by the same credentialing organization, is/are available to be administered prior to graduation from the program.

Results from said alternative examination(s) may be accepted, if designated as equivalent by the same organization whose credentialing examination(s) is/are so accredited.

2. Outcomes Reporting

The program must periodically submit to the JRC-DMS its goal(s), learning domains, evaluation systems (including type, cut score, and appropriateness), outcomes, its analysis of the outcomes and an appropriate action plan based on the analysis.

Programs not meeting the established thresholds must begin a dialogue with the JRC-DMS to develop an appropriate plan of action to respond to the identified shortcomings.

V. Fair Practices

A. Publications and Disclosure

1. Announcements, catalogs, publications, and advertising must accurately reflect the program offered
2. At least the following must be made known to all applicants and students: the sponsor's institutional and programmatic accreditation status as well as the name, mailing address, web site address, and phone number of the accrediting agencies; admissions policies and practices, including technical standards (when used); policies on advanced placement, transfer of credits, and credits for experiential learning; number of credits required for completion of the program; tuition/fees and other costs required to complete the program; policies and processes for withdrawal and for refunds of tuition/fees.
3. At least the following must be made known to all students: academic calendar, student grievance procedure, criteria for successful completion of each segment of the curriculum and graduation, policies for student leave of absence, exposure to blood borne pathogens, communicable diseases, and pregnancy, and policies and processes by which students may perform clinical work while enrolled in the program.
4. The sponsor must maintain, and make available to the public, current and consistent summary information about student/graduate achievement that includes the results of one or more of the outcomes assessments required in these Standards.

The sponsor should develop a suitable means of communicating to the communities of interest the achievement of students/graduates (e.g. through a website or electronic or printed documents).

B. Lawful and Non-discriminatory Practices

All activities associated with the program, including student and faculty recruitment, student admission, and faculty employment practices, must be non-discriminatory and in accordance with federal and state statutes, rules, and regulations. There must be a faculty grievance procedure made known to all paid faculty.

A procedure should be established for determining that a student's health will permit him or her to meet the documented technical standards of the program.

C. Safeguards

The health and safety of patients, students, and faculty associated with the educational activities of the students must be adequately safeguarded.

All activities required in the program must be educational and students must not be substituted for staff.

The program must ensure voluntary and prudent use of students or other human subjects for non-clinical scanning. Students' grades and evaluations must not be affected by participation or non-participation.

The combined total didactic/clinical involvement of the student in the program must not exceed 40 hours per week.

Students should be informed of and have access to the health care services provided to all other students of the institution.

D. Student Records

Satisfactory records must be maintained for student admission, advisement, counseling, and evaluation. Grades and credits for courses must be recorded on the student transcript and permanently maintained by the sponsor in a safe and accessible location.

E. Substantive Change

The sponsor must report substantive change(s) as described in Appendix A to CAAHEP/JRC-DMS in a timely manner. Other substantive change(s) to be reported to JRC-DMS within the time limits prescribed include:

1. Changes in affiliates
2. Added or deleted learning concentrations
3. Institution's mission or objectives if these will affect the program
4. Addition of courses that represent a significant departure in content or in method of delivery
5. Degree or credential level
6. Substantial change in clock or credit hours for successful completion of a program or in the length of a program.

F. Agreements

There must be a formal affiliation agreement or memorandum of understanding between the sponsor and all other entities that participate in the education of the students describing the relationship, role, and responsibilities between the sponsor and that entity.

The delineation of responsibilities should include student supervision, benefits, liability and financial arrangements, if any. The agreement should include a clause to protect students and to ensure due process.

An affiliate is an institution having adequate resources to provide a broad range of appropriate clinical education opportunities for students.

A clinical education center is a department, division, or other designated part of a clinical affiliate having adequate resources to provide clinical education opportunities for students. Multiple clinical education centers may be identified within a clinical affiliate

Use of This Handbook

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

_____ 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.

Printed Name

Date

Signed

Date

Program Official

Date

