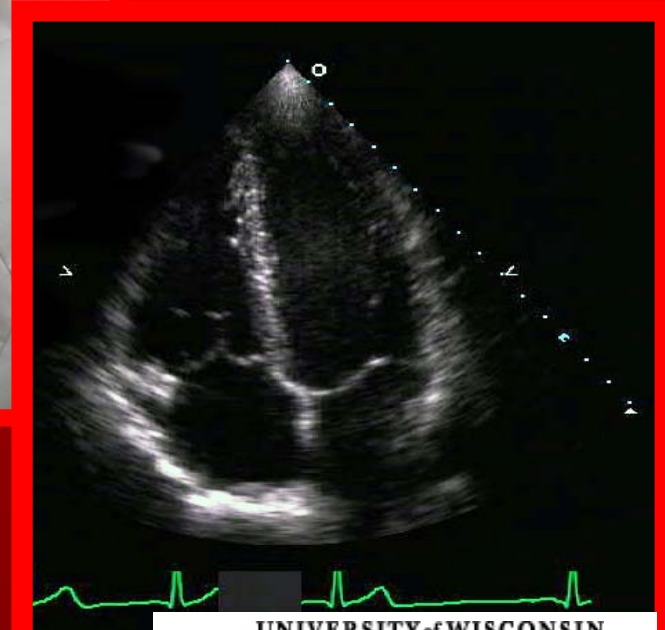


University of Wisconsin Hospital and Clinics School of Diagnostic Medical Sonography

Program Bulletin

2010 - 2011



School of Diagnostic Medical Sonography

UWHealth

University of Wisconsin
Hospital and Clinics

UNIVERSITY of WISCONSIN
UWMILWAUKEE

College / Department of Health Sciences
Clinical Laboratory Sciences Program

Disclaimer

The University of Wisconsin Hospital and Clinics School of Diagnostic Medical Sonography does not discriminate on the basis of race, sex, handicap, religion, age, national origin, or veteran's status.

The information, policies, and rules contained herein may be changed without notice. No part of this bulletin should be construed as a contract or an offer to contract. The bulletin is intended only as an informational guide to the University of Wisconsin Hospital and Clinics School of Diagnostic Medical Sonography.

Any questions or concerns regarding the admissions, education curricula, or administrative policies held by the University of Wisconsin Hospital and Clinics School of Diagnostic Medical Sonography should be directed to the program director.

UNIVERSITY OF WISCONSIN HOSPITAL AND CLINICS SCHOOL OF DIAGNOSTIC MEDICAL SONOGRAPHY FACULTY Echocardiography/ Vascular Sonography Option

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UNIVERSITY OF WISCONSIN HOSPITAL AND CLINICS SCHOOL OF DIAGNOSTIC MEDICAL SONOGRAPHY FACULTY General/ Vascular Sonography Option

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EDUCATION AT THE UNIVERSITY OF WISCONSIN HOSPITAL AND CLINICS

The University of Wisconsin Hospital & Clinics (UWHC) is a level one regional trauma center serving southeast Wisconsin. Its educational philosophy focuses on providing high quality, integrated medical, nursing, and allied health programs where didactics, clinical experience, patient care, and research are stressed. The UWHC maintains 548 beds, 70 primary care and specialty clinics, 22 operating rooms, 3 intensive care units, and a 24-bed trauma life support center (TLC) critical care unit.

PROGRAM DESCRIPTION

The UWHC campus is the host site for the School of Diagnostic Medical Sonography. The school was established in 1980, and offers a 24-month echocardiography/vascular sonography option (for cardiac ultrasound) and a 24-month general/vascular diagnostic medical sonography option. The curriculum is six semesters long consisting of four traditional semesters and two summer sessions. The academic year runs from September through August. Students participate in the didactic and clinical portions of the program simultaneously. Combined didactic and clinical hours total 40 hours per week.

The echocardiography/vascular sonography option includes didactic and clinical instruction in the areas of echocardiography (adult, pediatric, and fetal) and vascular ultrasound. The general/vascular sonography option includes didactic and clinical instruction in the areas of general sonography (abdominal, OB/Gyn, fetal echocardiography) and vascular ultrasound. Both options are studied in a format that integrates classroom teaching and practical experience. Laboratory demonstrations of equipment control operation and patient examination methods are employed in all courses. Audiovisual aids such as digital ultrasound images, CD-ROMs, DVDs, slides, videotapes, and hard-copy films are used extensively in didactic and clinical instruction

and testing. Students have access to a state-of-the-art multimedia library that contains a large collection of research materials including textbooks, journals, slide-tapes, videotapes, CD-ROMs, DVDs as well as online resources to aid students in didactic assignments. The school places great emphasis on clinical training in addition to a didactic curriculum with a weekly schedule that includes two eight hour days of classes and three eight hour days of clinical training.

Student clinical rotations include time spent in cardiology, medical imaging, obstetric, gynecologic, and vascular surgery departments. Students rotate through multiple hospitals and clinics in south-central Wisconsin. Only one student is assigned to each clinical site at a time (with the exception of the University of Wisconsin Hospital sites) to provide students with individualized attention. Students are exposed to a wide variety of procedures, examination methods, and modern equipment.

The clinical sites included in the curriculum perform various types of ultrasound examinations including transthoracic (TTE), transesophageal (TEE), pediatric echocardiograms, stress echocardiograms, vascular ultrasound and intra-operative procedures on different patient populations in the echocardiography/vascular sonography option. In the general/vascular sonography option, students are exposed to abdominal imaging, transplant organ imaging, intraoperative imaging, obstetrical (to include high risk obstetrics), gynecologic imaging and vascular ultrasound. This insures that students are exposed various types of ultrasound techniques and a wide range of patient pathologic conditions.

UWHC School of Diagnostic Medical Sonography holds a formal affiliation agreement with UW-Milwaukee to provide professional study to candidates working towards a Bachelor's of Science in Diagnostic Medical Sonography.

UWHC School of Diagnostic Medical Sonography is administered through the University of Wisconsin-Madison Department of Radiology and UW Hospital and Clinics.

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ACADEMIC STANDARDS

CLINICAL – COURSES POLICY

The University of Wisconsin Hospital and Clinics School of Diagnostic Medical Sonography establishes minimum standards for undergraduate students enrolled in the general/vascular sonography and Echocardiography/Vascular Sonography options. A student whose clinical course (Clinical Education I, Clinical Education II, Clinical Education III, Clinical Education IV, Clinical Education V, Clinical Education VI) grade point average (GPA) falls below a 2.000 will be subject to the following academic actions.

- **Clinical Probation:** Imposed on students whose clinical course (Clinical Education I, Clinical Education II, Clinical Education III, Clinical Education IV, Clinical Education V, Clinical Education VI) GPA falls below 2.000 at any time period in the program will be placed on clinical probation.
- **Cleared Probation:** Achieved when clinical course GPA increases to 2.000 or above.
- **Dropped From School of Diagnostic Medical Sonography:** Imposed on any student on clinical probation who fails to earn a semester clinical course GPA of 2.000 after additional clinical objectives have been given during the clinical probation time period.
- **Reinstatement/Readmission:** A UW-Milwaukee student dropped from School of Diagnostic Medical Sonography may contact the University of Wisconsin-Milwaukee to discuss academic options. A non-UW-Milwaukee student may re-apply for the following academic course year.

DIDACTIC – COURSES POLICY

The University of Wisconsin Hospital and Clinics School of Diagnostic Medical Sonography establishes minimum standards for undergraduate students enrolled in the general/vascular sonography and Echocardiography/Vascular Sonography options. A student whose grade falls below a 2.000 in any course will be subject to the following academic actions:

- **Academic Probation:** Imposed on students whose course grade falls below 2.000 at any point in the program. The student on academic probation who is not able to achieve a course grade of a “C” (2.0) or better will be dismissed from the program.
- **Cleared Probation:** Achieved when the course grade increases to 2.000 or above.
- **Dropped From School of Diagnostic Medical Sonography:** Imposed on any student on academic probation who fails to earn a course grade of a “C” (2.0) or better.
- **Reinstatement/Readmission:** A UW-Milwaukee student dropped from School of Diagnostic Medical Sonography may contact the University of Wisconsin-Milwaukee to discuss academic options. A non-UW-Milwaukee student may re-apply for the following academic course year.

INCOMPLETES

You may be given an incomplete if you have carried a subject successfully until near the end of the semester but, because of illness or other unusual and substantiated cause beyond your control, have been unable to take or complete the final examination or to complete some limited amount of course work. An incomplete is not given unless you prove to the instructor that you were prevented from completing the course requirements for just cause as indicated. Students enrolled in the University of Wisconsin Hospital and Clinics School of Diagnostic Medical Sonography are required to complete a course marked incomplete prior to the end of the next succeeding semester. If you do not remove the incomplete during this period, the report of 'I' will lapse to 'F.'

REPEATING COURSES

Students enrolled in the University of Wisconsin Hospital and Clinics School of Diagnostic Medical Sonography are not allowed to repeat a course. All courses must be passed with a letter grade of 'C' or better to graduate.

GRADUATION REQUIREMENTS

Students enrolled in the University of Wisconsin Hospital and Clinics School of Diagnostic Medical Sonography must fulfill the following requirements

- 1. Complete all didactic courses with a letter grade of 'C' or better.*
- 2. Complete all clinical competencies.*
- 3. Complete all clinical rotations with a grade of 'C' or better.*
- 4. Complete all clinical courses with a letter grade of 'C' or better.*
- 5. All tuition is paid in full.*
- 6. All library materials are returned.*
- 7. All missed time must be made up.*

ACCREDITATION

The University of Wisconsin Hospital and Clinics School of Diagnostic Medical Sonography is accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP). The curriculum of UWHC School of Diagnostic Medical Sonography adheres to the *Standards and Guidelines for the Accreditation of Educational Programs in Diagnostic Medical Sonography* as required by CAAHEP.
www.caahep.org.

CERTIFICATION

University of Wisconsin Hospital and Clinics School of Diagnostic Medical Sonography graduates are eligible to take certification examinations offered by the American Registry of Diagnostic Medical Sonographers (ARDMS).

ADMISSION INFORMATION

QUALIFICATIONS

A Diagnostic Medical Sonography student must be a mature, responsible, person who is “people oriented” and genuinely interested in caring for the sick. The school selects students whose qualifications indicate the greatest potential for professional and personal development. All applicants are evaluated on the same basis regardless of race, sex, sexual orientation, handicap, religion, age, national origin, or veteran’s status.

Admission to UWHC School of Diagnostic Medical Sonography is highly competitive and granted to a limited number of applicants each year. A diagnostic medical sonography student must be a mature, dependable person who is “people oriented” and genuinely interested in caring for individuals who are ill, injured, or disabled. The following information offers a general description outlining the attributes of a successful candidate.

- Students must be in good health and physical condition in order to be capable of performing the duties required of a sonographer. Immunizations must be current.
- Applicants to the program must have attained the level, scope, and breadth of educational preparedness necessary to meet the demands of the rapidly evolving, highly technical, and diverse professional curriculum taught at UWHC School of Diagnostic Medical Sonography. Applicants must demonstrate an academic background that is strong in science and mathematics by completing the educational requirements as outlined on the following pages.
- **Prerequisite course work must be complete or in-progress by the application deadline with a passing grade. The applicant must have an overall GPA of at least 3.0 on a 4.0 scale.**
- Applicants must submit the \$50.00 application fee by check payable to the UWHC School of DMS by January 31, 2011 for the application to be considered complete.
- Practical experience caring for the ill and injured is required as it prepares the student for clinical practice. Such experience is obtained through CNA certification (required for applicants applying under prerequisite option 1) and patient care experience performed in nursing homes, hospitals, clinics, urgent care, or trauma centers.

- Applicants must provide proof of current CPR certification by the application deadline. Students will be required to maintain current CPR certification throughout their clinical education at the UWHC School of DMS.

NOTE: CPR certification courses administered online will not be accepted.

Applications that are complete and received by the deadline are reviewed, evaluated, and given a numerical score. Applications are scored based on past academic performance, accomplishments, references, work-related experience, and aptitude. The admission process is highly competitive due to the limited number of student positions available. Only those most qualified will be invited to proceed through each step of the selection process. Those applicants whose qualifications indicate the greatest potential for professional and personal development are selected for enrollment.

ADMISSIONS COMMITTEE

1. Program Director for the UWHC School of Diagnostic Medical Sonography.
2. General/ Vascular Sonography Clinical Education Coordinator for the UWHC School of Diagnostic Medical Sonography.
3. Echocardiography/ Vascular Sonography Clinical Education Coordinator for the UWHC School of Diagnostic Medical Sonography.
4. Cardiac Instructor for the UWHC School of Diagnostic Medical Sonography.
5. Supervisor for the UWHC Department of Radiology Ultrasound Laboratory.

TIMETABLE

- Applicants must submit all materials to UWM by **December 1st, 2010**.
- Qualified applicants will be notified for an interview no later than **March 1st, 2011**.
- Applicants will be notified regarding acceptance no later than **April 1st, 2011**.
- Courses begin **September 6th, 2011**.
- The University of Wisconsin Hospital and Clinics School of DMS follows the University of Wisconsin – Milwaukee Academic Timetable.

ADMISSION REQUIREMENTS

To qualify for admission into the University of Wisconsin Hospital and Clinics School of Diagnostic Medical Sonography, candidates must meet **ONE** of the following prerequisites.

PREREQUISITE #1

University of Wisconsin – Milwaukee College of Health Sciences major and have completed the following patient care prerequisites:

- Certified Nursing Assistant (CNA)*

PREREQUISITE #2

Post-Baccalaureate Program in Diagnostic Medical Sonography

Candidates who wish to apply to the University of Wisconsin-Milwaukee post-baccalaureate degree program in Diagnostic Medical Sonography must comply with the following criteria:

- Earned a Bachelor of Science degree in Radiologic Technology (BSRT) within the past 5 years.
- Achieved a minimum cumulative GPA of 3.0 on a 4.0 scale (or equivalent) from the BSRT degree granting institution.
- Completed the 2-year clinical training in Radiologic Technology at a site affiliated with the UW–Milwaukee College of Health Sciences. Refer to the UWM College of Health Sciences Radiologic Technology website for a list of clinical affiliate sites.
- Hold active certification as a registered Radiologic Technologist (ARRT credential RT(R)).

PLEASE NOTE: You must have been accepted to the Post-Baccalaureate Program in Diagnostic Medical Sonography by UW-Milwaukee in order to be eligible to apply to the UWHC School of Diagnostic Medical Sonography. All application materials should be submitted to the UW-Milwaukee College of Health Sciences advising office no later than December 1st, 2010.

For additional information please refer to the UW-Milwaukee College of Health Sciences.

Webpage <http://www.uwm.edu/chs>

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All applicants must complete the following prerequisite courses at the post-secondary level with a passing grade by June 1st immediately preceding the start date to qualify for admission:**

- Algebra, statistics, or higher mathematics course
- General college-level biology and/or radiographic biology
- General college-level physics and/or radiographic physics
- Communication skills
- Human anatomy and physiology
- Patient care
- Medical ethics and law
- Medical terminology
- Pathophysiology

Additionally, all applicants must have a minimum cumulative GPA of 3.0 on a 4.0 scale on all post-secondary coursework to qualify for admission.

***CNA WAIVER:** Applicants who feel they exceed the patient care requirement because of extensive direct patient care work experience may request a waiver of the CNA prerequisites. To do this, the applicant must send a letter to the School of DMS formally requesting a waiver. The request must include a description of the work done that the applicant believes satisfies the prerequisites, and documentation of the applicant's job duties and dates of employment. The Admissions Committee will vote and will notify the applicant of their decision. The Admissions Committee's decision is final.

****Example:** A student applying December 1st, 2010 for classes starting Fall 2011 must complete all prerequisite courses with a passing grade and satisfactory GPA by June 1st, 2011.

If you do not currently meet either of the two prerequisite options, we recommend you contact the UW – Milwaukee College of Health Sciences Clinical Laboratory Sciences Program.



APPLICATION CHECKLIST

The application deadline is December 1st. All application materials must be delivered to the UW-Milwaukee College of Health Sciences Advising Office by December 1st if the applicant wishes to be considered for the next scheduled start date. Applications received after the deadline will be deferred to the next enrollment period. Incomplete applications will not be processed. To apply to UWHC School of Diagnostic Medical Sonography each of the following steps must be completed prior to the application deadline:

- _____ 1. Complete and submit the School's application form. Please be sure to follow all instructions in completing the form.
- _____ 2. Submit two (2) UWHC School of Diagnostic Medical Sonography reference forms. It is preferred one be from an instructor and one from an employer.
- _____ 3. Submit official transcripts of all college courses. All transcripts must be sent directly by the school that awarded the certificate/degree/diploma. Prerequisite coursework must be complete or in-progress prior to the application deadline and have a passing grade. The applicant's overall GPA must be at least 3.0 on a 4.0 scale.
- _____ 4. Submit the non-refundable \$50.00 application fee via check or money order payable to the UWHC School of DMS.
- _____ 5. Submit copy of current CPR certification card.
- _____ 6. Submit a copy of Certified Nursing Assistant card or Radiologic Technologist Registry card.

The UWHC School of Diagnostic Medical Sonography does not keep a waiting list.

ADMISSIONS PROCEDURE

1. Applications that are complete and received by the application deadline are reviewed by a faculty committee, scored, and the applicant is notified of his/her eligibility. Incomplete applications will not be processed.
2. Prerequisite coursework must be complete or in-progress by the application deadline. Applicants must be able to provide proof of registration in any courses not completed by the application deadline to indicate the course will be completed before June 1st prior to the program start date.
3. The University of Wisconsin Hospital and Clinics School of Diagnostic Medical Sonography will notify applicants when the application is complete.
4. The interview will take place at the University of Wisconsin Hospital and Clinics. Interviews by the Admission Committee run approximately thirty minutes in length.
5. Those interviewed will receive an interview score. Applicants must receive an average interview score of 21 out of 28 possible points from all interviewers to be admitted into the UWHC School of DMS.
6. The Admissions Committee will select students for the upcoming enrollment period. Approximately 8 students will be selected for the general/vascular sonography option, and approximately 8 students will be selected for the echocardiography/vascular sonography option.
7. All applicants will be notified in writing whether or not they have been accepted into the program.
8. If accepted, the applicant is required to confirm or decline acceptance by the date stated in their acceptance letter. Accepted applicants not wishing to attend should notify the school immediately.
9. Students accepted into the program will receive additional information detailing their orientation, clinical rotations, and academic course schedules.
10. Accepted students will be required to provide proof of CPR certification from the time of application through the end of the UWHC School of DMS program. Should CPR certification expire during that period, the applicant will be required to show proof of the renewed certification.
11. Applicants accepted to the UWHC School of Diagnostic Medical Sonography must submit a **non-refundable** \$100.00 enrollment fee to hold their place in the class for which they are accepted.

APPLICATION EVALUATION SCORING

All applicants are evaluated on the same basis regardless of race, sex, sexual orientation, handicap, religion, age, national origin, or veteran's status.

Applications are scored according to the following guidelines:

1. Education/ Transcripts
2. References/ Employment History
3. Personal Interview

During the personal interview, the Admissions Committee rates the interviewed applicants on the following dimensions:

1. Knowledge of Ultrasound Profession
2. Motivation
3. Professionalism
4. General Sonography/ Echocardiography Background Research
5. Work Experience
6. Short Term Goals
7. Long Term Goals

FINANCIAL AID

Students should follow the University of Wisconsin – Milwaukee policies for applying for financial aid.

TEXTBOOKS

Textbooks are required and recommended by the University of Wisconsin Hospital and Clinics School of Diagnostic Medical Sonography. A textbook list will be sent to students with the information packets included with welcome letters. Students should plan to spend up to \$2,500.00 total over the two year program for required textbooks. Students will receive a book list with instructions on where to purchase their books on a yearly basis.

TUITION FEES**

Tuition is billed and paid to the University of Wisconsin – Milwaukee. Tuition is assessed by the number of credit hours for which the student is registered.

In addition, UWHC will charge a \$750.00 clinical lab fee each semester for fall and spring semesters. No clinical lab fee will be due in the summer semester. This will be a total of \$1500.00 in clinical lab fees that are due each year, for 2 years. The clinical lab fees will be due on the first day of each Fall and Spring semester, payable by check directly to "UWHC School of DMS".

***Tuition fees are subject to change. Applicants should contact faculty of the University of Wisconsin Hospital and Clinics School of Diagnostic Medical Sonography for updated tuition information.*

ENROLLMENT FEE

Applicants accepted to the UWHC School of Diagnostic Medical Sonography must submit a **non-refundable** \$100.00 enrollment fee to hold their place in the class for which they are accepted.

The due date of this fee will be stipulated by the School in the letter of acceptance. The enrollment fee will be applied towards the first semester clinical lab fees, so newly enrolled students will only need to pay an additional \$650.00 by September 1st for their first semester's clinical lab fees (\$100.00 enrollment fee + \$650.00 = \$750.00 clinical lab fee).

Applicants who do not submit the enrollment fee by the stated deadline will forfeit their enrollment and an alternate applicant will be offered their place in the coming class.

HOUSING

Students are responsible for providing their own room and board during the duration of the general/vascular sonography option and/or Echocardiography/ Vascular Sonography option. The University of Wisconsin Campus Assistance Center can aid students to locate rental housing (houses, apartments, boarding houses, and rooms in private residences) online at <http://housing.civc.wisc.edu/>. Contact information for the UW Campus Assistance Center is provided below:

Campus Assistance Center
University of Wisconsin-Madison
420 North Lake Street
Madison, WI 53706
PHONE: (608) 263-6400

OTHER EXPENSES

Students in both the general/vascular sonography and echocardiography/vascular sonography options are required to participate in clinical training rotations through a variety of hospitals and clinics located in the city of Madison and southern Wisconsin. While all clinical sites within Madison are accessible by public transportation bus service, sites outside the Madison area may only be accessible by private automobile. Students are responsible for their own transportation to these outlying sites. Those who wish to park in parking lots located at or near clinical sites are may be required to pay a fee.

Students in both the general/vascular sonography and echocardiography/vascular sonography options are required to wear a white lab coat and a uniform of navy blue scrubs to clinical sites. Students are responsible for providing their own lab coats and uniforms.

ATTENDANCE

Students are expected to attend all classes and clinical rotations. In case of emergency the student will need to notify the program director, clinical education coordinator and clinical site that they will be absent. All missed time must be made up on semester breaks. All missed time must be made up prior to graduation.

VACATION

Students enrolled in the University of Wisconsin Hospital and Clinics School of Diagnostic Medical Sonography will have scheduled semester breaks. Therefore, **no additional vacation time will be granted during the academic semesters.** The University of Wisconsin Hospital and Clinics School of Diagnostic Medical Sonography follows the University of Wisconsin – Milwaukee academic timetable.

RETENTION

Any student receiving a final grade below a “C” in any course will be dismissed from the program. See Academic Standards section.

HEALTH REQUIREMENTS/ HEALTH INSURANCE

1. Applicants must have a physical completed by University of Wisconsin Hospital and Clinics (UWHC), at no cost to the student, prior to start date. They must be screened by Employee Health Services and be able to meet the physical requirements of the training.
2. Students are responsible for their own health insurance.
3. Students who require medical care may go to the University of Wisconsin University Student Health Service for treatment. Students must make an appointment prior to seeing medical professionals at the Student Health Service. University of Wisconsin University Student Health Service is located at 333 East Campus Mall in Madison, WI.
4. University of Wisconsin Hospital and Clinics (UWHC) Employee Health Services will treat students free of charge who become ill or injured while on clinical duty at a UWHC hospital or clinical site. Students utilizing UWHC Emergency Services for medical treatment will be billed for those services.

TECHNICAL STANDARDS PHYSICAL REQUIREMENTS

Applicants should be aware that:

1. Sonographer must have the ability to organize and accurately perform the individual steps of the ultrasound examination in proper sequence.
2. The sonographer is expected to examine patients who may have communicable diseases and/or other health problems
3. Sonographer must have the capability to be independently mobile.
4. Sonographer must have the hearing and visual acuity sufficient to perform ultrasound examinations, observe patients, read monitors, document, and hear equipment alarms.
5. Sonographers must be able to analyze technical information, utilize independent judgment to tailor the exam to answer the clinical question and collaborate with physicians and other members of the health care team.
6. Sonographers must be able to provide an oral or written summary of the technical findings to the interpreting physician.
7. Sonographer must have ability to:
 - Transport patients from wheel chairs and patient carts to an examination table (to lift more than 50 pounds routinely).
 - Sit/stand for prolonged periods of time.
 - Work with arms routinely.
 - Push and pull routinely.
 - Kneel and squat routinely.
 - Work within a limited space.
 - Transport mobile ultrasound equipment to patient rooms, operating rooms, and research laboratories.

ECHOCARDIOGRAPHY/ VASCULAR SONOGRAPHY OPTION

ECHOCARDIOGRAPHY/ VASCULAR SONOGRAPHY OPTION COURSE OUTLINE

Junior Year Fall Semester

Introduction to Sonography
Introduction to Fetal Echocardiography
Cardiovascular Principles I
Vascular Sonography I
Clinical Education I

Junior Year Spring Semester

Medical Ultrasound Principles and Apparatus
Embryology of the heart
Adult Echocardiography/ Vascular Sonography I
Vascular Sonography II
Clinical Education II

Junior Year Summer Semester

Pediatric Echocardiography I
Adult Echocardiography II
Clinical Education III

Senior Year Fall Semester

Adult Echocardiography III
Pediatric Echocardiography II
Vascular Sonography III
Stress Echocardiography
Introduction to Fetal Echocardiography
Clinical Education IV

Senior Year Spring Semester

Seminar in Advanced Medical Imaging
Seminar in Ultrasound Research (Vascular IV)
Seminar in Management and Education in Medical Imaging
Seminar in Professional Development
Clinical Education V

Senior Year Summer Semester

Transesophageal Echocardiography
Clinical Education VI

ECHOCARDIOGRAPHY/ VASCULAR SONOGRAPHY – ROLE OF ULTRASOUND

Knowledge of anatomy is critical to the performance and interpretation of ultrasound examinations, therefore the Echocardiography/ Vascular Sonography curriculum stresses anatomy, physiology, hemodynamics, and pathology. In addition to anatomy, the knowledge of ultrasound

physics is also critical to the performance of ultrasound examinations and the generation of diagnostic medical images. Students are required to take the course “Ultrasound Physics & Instrumentation” taught by faculty from the University of Wisconsin Department of Medical Physics. The class teaches the fundamental physical principles upon which diagnostic medical ultrasound is based and in-depth explanations of how physics is manipulated by ultrasound equipment to create images.

The echocardiography/ vascular sonography curriculum covers ultrasound imaging of the heart in a variety of different ways including transesophageal, transthoracic, and introduction to stress echocardiograms on both adult and pediatric patient populations. Students are also exposed to the basic principles of fetal echocardiography as these patients may be followed in utero by general sonographers or echocardiographers and tend to be followed by echocardiographers as neonates. In addition to attending formal classes, students often have an opportunity to attend physician lectures, cardiology conferences, and interesting case readout sessions conducted by cardiologists.

ECHOCARDIOGRAPHY/ VASCULAR SONOGRAPHY - ROLE AS HEALTHCARE PROFESSIONAL

The echocardiographer is a health care professional who performs diagnostic ultrasound examinations of the heart under a physician’s supervision. Echocardiographers are required to integrate medical knowledge of anatomy, physiology, pathology, and ultrasound physics to imaging patients in the clinical setting. Echocardiographers work within the framework of an examination protocol where he/she must exercise judgment to tailor each examination to the individual patient needs. The interaction between ultrasound and a patient’s body tissues requires the constant adjustment of techniques and procedures during the course of the examination. Therefore, the sonographer must be able to understand the interaction between ultrasound physics, anatomy, pathology, and equipment manipulation to produce diagnostic medical images that provide comprehensive information about the patient’s specific pathology.

Most echocardiographers work in echocardiography departments located with a hospital, however, many others prefer to work in outpatient clinics, doctor's offices, and mobile medical imaging services where ultrasound examinations are performed on a strictly outpatient basis. Non-clinical positions are available with medical imaging equipment manufacturers who employ echocardiographers test ultrasound equipment and function as application specialists to teach new technologies to clinical sonographers.

ECHOCARDIOGRAPHY/ VASCULAR SONOGRAPHY OPTION

PROGRAM GOALS

It is the goal of the UWHC School of Diagnostic Medical Sonography Program Echocardiography/Vascular Sonography Option is to produce highly qualified echocardiographers who function in a competent fashion in meeting the health care needs of the patient. Graduates of the program will be able to utilize the equipment necessary in the operation of an echocardiography department and the production of high quality diagnostic echocardiograms.

ECHOCARDIOGRAPHY/ VASCULAR SONOGRAPHY OPTION OBJECTIVES

Upon completion of the UWHC School of Diagnostic Medical Sonography Program the student will be able to:

1. Conduct themselves in a courteous and professional manner while in the hospital and clinical environment.
2. Identify and describe sonographic terminology and use the terminology in an effective manner.
3. Employ the use of medical terminology and abbreviations pertinent to diagnostic medical ultrasound.
4. Identify and perform appropriate nursing care procedures and techniques used in the general care of patients in various states of health and various conditions demanding special needs.
5. Demonstrate knowledge of the physical principles of diagnostic medical ultrasound and their applications to the clinical environment.
6. Describe the principles and applications of Doppler ultrasound.

7. Manipulate the technical controls on the equipment used in the ultrasound department to produce an optimum image for diagnostic purposes.
8. Record and process for display the images necessary for a diagnostic medical ultrasound examination.
9. Identify the biological effects of diagnostic medical ultrasound and take the necessary precautions to avoid excessive exposure of ultrasound in patients.
10. Demonstrate the appropriate skills in performing a quality assurance test.
11. Demonstrate the ability to apply knowledge of cross-sectional anatomy, congenital heart disease and acquired heart disease to diagnostic echocardiography ultrasound images.
12. Describe the process of imaging the heart and great vessels utilizing diagnostic ultrasound.
13. Demonstrate the skills necessary to perform and echocardiogram of the adult heart and pediatric heart.
14. Identify normal and pathological conditions on an echocardiogram.
15. Assist the attending physician/sonographer in the differential diagnosis process of a pathological entity.
16. Describe the principles and applications of stress echocardiography.
17. Describe the principles and applications of transesophageal echocardiography.
18. Demonstrate the ability to maintain a sterile field while assisting with an invasive ultrasound study.

ECHOCARDIOGRAPHY/ VASCULAR SONOGRAPHY OPTION STANDARDS

1. The school will accept as students, applicants who exhibit by past education, experience and personal interview a high potential for success in diagnostic medical sonography. The grade point average shall be a minimum of 3.0 on a 4.0 scale in previous academic work. Faculty and staff employed by the University of Wisconsin Hospital & Clinics including the Program Director, Clinical Education Coordinator, and lead workers in the Radiology Department Ultrasound Division and Cardiology Department shall serve on the admissions committee.
2. Students will learn and understand concepts related to the art and science of diagnostic medical sonography and be able to apply them to clinical situations.
3. Students will communicate effectively with patients and provide care for their physical, emotional, and educational needs.
4. Students will learn to function and communicate effectively as an essential member of the diagnostic medical sonography team.
5. Students will develop ethical and moral practices consistent with the institution's policies as well as the Code of Ethics upheld within the field of Diagnostic Medical Sonography.
6. Students will develop critical thinking skills and will apply them in the classroom and the clinical situations. The Program Director will evaluate all course and clinical grades at the end of each quarter. A minimum grade of "C" in all academic courses and clinical practices is the required standard.
7. Students will demonstrate punctuality, dependability, initiative, and adaptability in their classroom and clinical performance.
8. Graduates will successfully pass the ARDMS examinations.
9. Graduates and employers will exhibit a high degree of satisfaction with the educational experience in postgraduate and employer surveys.
10. Graduates will continue their education to remain abreast of new developments in diagnostic medical sonography.

ECHOCARDIOGRAPHY/ VASCULAR SONOGRAPHY OPTION COURSE DESCRIPTIONS –

INTRODUCTION TO SONOGRAPHY

Credits: 2 Credits

Course Description:

In this course the student will prepare for the new and challenging demands of sonography training in a hospital. Clinical policies and procedures are emphasized. Course content includes materials emphasizing personal adaptation skills and staff development issues, nursing procedures, ethics, and skills to become a better student. An overview of basic sonographic terminology, technique and equipment form the framework for future study. There is a lab component. A final written and practical exam is given. Students not passing this course will need to retake this course prior to continuing on in the Diagnostic Medical Sonography sub major.

ADULT ECHOCARDIOGRAPHY I

Credits: 3 Credits

Course Description:

This course will discuss prosthetic valves, diastology, and cardiac valvular pathology seen on echocardiograms in the adult population.

ADULT ECHOCARDIOGRAPHY II

Credits: 2 Credits

Course Description:

This course will discuss cardiac pathology seen on echocardiograms in the adult population, to include cardiomyopathies (hypertrophic, dilated, restrictive), pericardial disease, endocarditis, and cardiac masses.

ADULT ECHOCARDIOGRAPHY III

Credits: 3 Credits

Course Description:

This course will discuss cardiac anatomy and pathology as it is seen on echocardiography. This course will focus on intraoperative cardiac ultrasound, congenital heart disease in the adult, and guidance for invasive procedures and contrast echocardiography.

CARDIOVASCULAR PRINCIPLES

Credits: 3 Credits

Course Description:

This course will discuss cardiac physiology, mechanical events, left ventricle function indicators, timing of mitral and aortic flow, auscultation, phonocardiography, hemodynamics and Doppler applications to echocardiography, spectral Doppler Measurements, Indirect measurements, Doppler Methods and Formulas, Right Heart Pressures, and echocardiography findings in the following disease states; aortic stenosis, aortic regurgitation, mitral stenosis, mitral regurgitation, concepts of dP/dt, index of myocardial performance, evaluation of LV diastolic filling and hypertrophic cardiomyopathy assessment.

ECHOCARDIOGRAPHY/ VASCULAR SONOGRAPHY CLINICAL EDUCATION I

Credits: 3 Credits

Course Description:

Students are scheduled for clinical practicum at participating clinical education centers. Clinical experience rotations for Practicum I include adult echocardiography and/or vascular technology. During this practicum, students will be assigned clinical competencies and objectives to complete.

ECHOCARDIOGRAPHY/ VASCULAR SONOGRAPHY CLINICAL EDUCATION II

Credits: 3 Credits

Course Description:

Students are scheduled for clinical practicum at participating clinical education centers. Clinical experience rotations for Practicum II include ultrasound imaging of the adult heart and/or vascular technology. . During this practicum, students will be assigned competencies and objectives to complete.

ECHOCARDIOGRAPHY/ VASCULAR SONOGRAPHY CLINICAL EDUCATION III

Credits: 3 Credits

Course Description:

Students are scheduled for clinical practicum at participating clinical education centers. Clinical experience rotations for Practicum III include imaging of adult and pediatric heart and/or vascular technology.. During this practicum, students will be assigned clinical competencies and objectives to complete.

ECHOCARDIOGRAPHY/ VASCULAR SONOGRAPHY CLINICAL EDUCATION IV

Credits: 3 Credits

Course Description:

Students are scheduled for clinical practicum at participating clinical education centers. Clinical experience rotations for Practicum IV include imaging of the adult heart, pediatric heart and vascular technology. During this practicum, students will be assigned clinical competencies and objectives to complete.

ECHOCARDIOGRAPHY/ VASCULAR SONOGRAPHY CLINICAL EDUCATION V

Credits: 3 Credits

Course Description:

Students are scheduled for clinical practicum at participating clinical education centers. Clinical experience rotations for Practicum V include imaging of the adult heart, pediatric heart and vascular technology. During this practicum, students will be assigned clinical competencies and objectives to complete.

ECHOCARDIOGRAPHY/ VASCULAR SONOGRAPHY CLINICAL EDUCATION VI

Credits: 3 Credits

Course Description:

Students are scheduled for clinical practicum at participating clinical education centers. Clinical experience rotations for Practicum VI include imaging of the adult heart, pediatric heart and vascular technology. During this practicum, students will be assigned clinical competencies and objectives to complete.

INTRODUCTION TO FETAL ECHOCARDIOGRAPHY

Credits: 3 Credits

Course Description:

Advanced study of the fetal heart to include normal anatomy and congenital heart disease. This course will cover embryology of the heart, the fetal echocardiography exam and protocols and congenital heart disease. Exposure measurements and levels from diagnostic equipment are discussed, as well as biological effects and risk.

EMBRYOLOGY OF THE HEART

Credits: 3 Credits

Course Description:

This course will discuss development of the cardiovascular system.

PEDIATRIC ECHOCARDIOGRAPHY I

Credits: 2 Credits

Course Description:

This course will introduce the student echocardiographer to various types of congenital heart disease. The types of congenital heart disease to be discussed in this course are; Patent Ductus Arteriosus (PDA), atrial septal defect (ASD), ventricular septal defect (VSD), pulmonic stenosis (PS), coarctation of the aorta, transposition of the great arteries (TGA), double outlet right ventricle (DORV) and double outlet left ventricle.

MEDICAL ULTRASOUND PRINCIPLES AND APPARATUS

Credits: 3 Credits

Course Description:

The purpose of this course is to enable students to become familiar with the physical principles governing the of medical ultrasound equipment. Emphases will be on diagnostic imaging systems, but students also will become acquainted with therapeutic devices, including shock wave as well as thermal delivery systems. Basic principles of acoustic transmission and reflection in tissues are covered at an elementary level. Design and performance of transducers, pulse-echo imaging equipment, Doppler and color flow equipment and physical therapy systems are emphasized. The physics leading to image artifacts is described, as are methods for evaluating performance of ultrasound devices. Finally, acoustical exposure measurements and levels from diagnostic equipment are discussed, as well as biological effects and risk.

PEDIATRIC ECHOCARDIOGRAPHY II

Credits: 3 credits

Course Description:

This course will introduce the student echocardiographer to various types of congenital heart disease. The types of congenital heart disease to be discussed in this course are; univentricular heart, right ventricular hypoplasia, left ventricular hypoplasia, inflow anomalies, outflow anomalies, total anomalous pulmonary venous return and coronary artery anomalies, conotruncal anomalies, abnormalities within the cardiac chambers, proximal vessels and thorax, cardiomyopathies, postoperative evaluations and complex combinations of previously discussed congenital heart defects.

TRANSESOPHAGEAL ECHOCARDIOGRAPHY

Credits: 2 Credits

Course Description:

This course will discuss the indications, utility, limitations and technical procedures related to transesophageal echocardiography.

VASCULAR SONOGRAPHY I

Credits: 3 Credits

Course Description:

Peripheral Vascular direct and indirect arterial and venous, normal and abnormal will be discussed. Students will become familiar with the clinical symptoms and specific ultrasound protocols for normal and abnormal cases associated with peripheral vascular disease.

VASCULAR SONOGRAPHY II

Credits: 3 Credits

Course Description:

Hemodynamics and cerebrovascular anatomy, normal and abnormal will be discussed. Students will become familiar with the clinical symptoms and specific ultrasound protocols for normal and abnormal cases associated with cerebrovascular disease.

VASCULAR SONOGRAPHY III

Credits: 3 Credits

Course Description:

Abdominal, transplant organ, superficial part Doppler and advanced hemodynamics, normal and abnormal will be discussed. Students will become familiar with the clinical symptoms and specific ultrasound protocols for normal and abnormal cases associated with vascular disease.

SEMINAR IN ADVANCED MEDICAL IMAGING

Credit hours: 3 Credits

Course Description:

The student will be exposed to normal anatomy and pathology cases combining diagnostic medical sonography, computed sonography and magnetic resonance imaging. The student will be exposed to normal anatomy and pathology cases combining two-dimensional diagnostic medical sonography, three dimensional and four dimensional sonography techniques. The student will gain an understanding how diagnosis are made and patients are managed based on findings from the use of three dimensional and four dimensional imaging modalities.

**SEMINAR IN ULTRASOUND RESEARCH/
VASCULAR IV**

Credit hours: 3 Credits

Course Description:

students will discuss and review the entire vascular system, including anatomy, pathology, and pathophysiology. The student will review and perform the complete array of indirect and direct vascular sonographic examinations. The course will cover exam review material in anticipation of the Vascular Technology board examination.

**SEMINAR IN MANAGEMENT AND
EDUCATION IN MEDICAL IMAGING**

Credit hours: 3 Credits

Course Description:

This course will familiarize the diagnostic medical sonography with educational and management issues in the profession. Students will problem solve management issues as they relate to diagnostic medical sonography and will explore educational strategies employed in ultrasound education. Students will participate in department quality assurance projects and educational course development projects.

**SEMINAR IN PROFESSIONAL
DEVELOPMENT**

Credit hours: 3 Credits

Course Description:

This course will familiarize the diagnostic medical sonography student with the history of the profession and professional societies associated with the field of diagnostic medical sonography. Students will learn how professional societies influence practice in the United States. Students will learn about the job application process in sonography / echocardiography and learn how to market their skills.

GENERAL/ VASCULAR SONOGRAPHY OPTION

GENERAL/ VASCULAR SONOGRAPHY – COURSE CONTENT OUTLINE

Junior Year Fall Semester

Introduction to Sonography
Abdominal Sonography I
OB/GYN Sonography I
Vascular Sonography I
Clinical Education I

Junior Year Spring Semester

Medical Ultrasound Principles and Apparatus
Abdominal Sonography II
OB/GYN Sonography II
Vascular Sonography II
Clinical Education II

Junior Year Summer Semester

Breast Sonography
OB/GYN Sonography III
Clinical Education III

Senior Year Fall Semester

Abdominal Sonography III
Obstetrical Sonography IV
Vascular Sonography III
Introduction to Fetal Echocardiography
Clinical Education IV

Senior Year Spring Semester

Seminar in Advanced Medical Imaging
Seminar in Ultrasound Research (Vascular IV)
Seminar in Management and Education in Medical
Imaging
Seminar in Professional Development
Clinical Education V

Senior Year Summer Semester

Sonography Clinical Education IV
Introduction to Neurosonography

GENERAL/ VASCULAR SONOGRAPHY OPTION - DESCRIPTION

Knowledge of anatomy is critical to the performance and interpretation of ultrasound examinations, therefore the General / Vascular Sonography curriculum stresses anatomy, physiology, hemodynamics, and pathology. In addition to anatomy, the knowledge of ultrasound physics is also critical to the performance of ultrasound examinations and the generation of diagnostic medical images. Students are required to take the course "Ultrasound Physics & Instrumentation," taught by faculty from the University of Wisconsin Department of Medical Physics. The class teaches the fundamental physical principles upon which diagnostic medical ultrasound is based and in-depth explanations of how physics is manipulated by ultrasound equipment to create images.

The general sonography curriculum covers ultrasound imaging in obstetrics and gynecology, evaluation of the abdomen, thyroid, scrotum, prostate, and neonatal brain. The vascular section includes evaluation of the major blood vessels of the neck, brain, abdomen, and extremities. In addition to attending formal classes, students often have an opportunity to attend physician lectures and conferences on ultrasound-related topics.

GENERAL/ VASCULAR SONOGRAPHY – PROFESSION

The diagnostic medical sonographer is a health care professional who performs diagnostic ultrasound examinations under a physician's supervision. Sonographers are required to integrate medical knowledge of anatomy, physiology, pathology and ultrasound physics to imaging patients in the clinical setting. Sonographers work within the framework of an examination protocol where he/she must exercise judgment to tailor each examination to the individual patient's needs. The interaction between ultrasound and a patient's body tissues requires the constant adjustment of techniques and procedures during the course of the examination. Therefore, the sonographer must be able to understand the interaction between ultrasound physics, anatomy, pathology, and equipment manipulation to produce diagnostic medical images that provide comprehensive information about the patient's specific pathology.

Most sonographers work in hospital based radiology departments performing abdominal, pelvic, and vascular examinations or in cardiology (i.e. echocardiography) departments performing cardiac and vascular examinations in emergency, operating room, inpatient, and outpatient situations. However, vascular surgery departments and obstetric departments can also employ sonographers who perform specialized ultrasound examinations tailored to follow specific protocols needed in those specialties. Many sonographers prefer to work in outpatient clinics and mobile medical imaging services where ultrasound examinations are performed on a non-emergency basis. Non-clinical positions are available with medical imaging equipment manufacturers who employ sonographers to test ultrasound equipment and function as application specialists to teach new technologies to clinical sonographers.

GENERAL/ VASCULAR SONOGRAPHY – ROLE AS A HEALTHCARE PROFESSIONAL

Diagnostic medical sonography uses ultrasound, or high frequency sound waves, to characterize and diagnose diseases in body organs and tissues. The use of ultrasound in medical diagnosis has become widespread in recent years. Among the parts of the body most commonly evaluated with ultrasound are the heart, blood vessels, abdominal organs, pelvic organs, and the pregnant uterus.

GENERAL/ VASCULAR SONOGRAPHY OPTION - PROGRAM GOALS

It is the goal of the UWHC School of Diagnostic Medical Sonography Program to produce highly qualified sonographers who function in a competent fashion in meeting the health care needs of the patient. Graduates of the program will be able to utilize the mechanical equipment used by ultrasound departments for the production of high quality diagnostic sonograms.

GENERAL/ VASCULAR SONOGRAPHY OPTION OBJECTIVES

Upon completion of the UWHC School of Diagnostic Medical Sonography Program the student will be able to:

1. Conduct themselves in a courteous and professional manner while in the hospital and clinical environment.
2. Identify and describe sonographic terminology and use the terminology in an effective manner.
3. Employ the use of medical terminology and abbreviations pertinent to diagnostic medical ultrasound.
4. Identify and perform appropriate nursing care procedures and techniques used in the general care of patients in various states of health and various conditions demanding special needs.
5. Demonstrate knowledge of the physical principles of diagnostic medical ultrasound and their applications to the clinical environment.
6. Describe the principles and applications of Doppler ultrasound.
7. Manipulate the technical controls on the equipment used in the ultrasound department to produce an optimum image for diagnostic purposes.
8. Record and process for display the images necessary for a diagnostic medical ultrasound examination.
9. Identify the biological effects of diagnostic medical ultrasound and take the necessary precautions to avoid excessive exposure of ultrasound in patients.
10. Demonstrate the appropriate skills in performing a quality assurance test.

11. Demonstrate the ability to mentally transform gross anatomy to cross-sectional anatomy relative to diagnostic medical ultrasound.
12. Demonstrate the skills necessary to perform an ultrasound examination of any abdominal and pelvic organs, the gravid uterus, neonatal brain, superficial structures and vascular hemodynamics routinely examined in a diagnostic ultrasound department.
13. Identify normal and pathological conditions on a sonogram of the abdominal and pelvic organs, the gravid uterus, neonatal brain, superficial structures, and vascular structures routinely examined in the diagnostic medical ultrasound department.
14. Assist the attending physician/sonographer in the differential diagnosis process of a pathological entity.
15. Demonstrate the ability to maintain a sterile field while assisting with an invasive ultrasound study.

GENERAL/ VASCULAR SONOGRAPHY OPTION STANDARDS

1. The school will accept as students, applicants who exhibit by past education, experience and personal interview a high potential for success in diagnostic medical sonography. The grade point average shall be a minimum of 3.0 on a 4.0 scale in previous academic work. Faculty and staff employed by the University of Wisconsin Hospital & Clinics including the Manager of Education and Training for the Department of Radiology, Program Director, Clinical Education Coordinator, and lead workers in the Radiology Department Ultrasound Division and Cardiology Department shall serve on the admissions committee.
2. Students will learn and understand concepts related to the art and science of diagnostic medical sonography and be able to apply them to clinical situations.
3. Students will communicate effectively with patients and provide care for their physical, emotional, and educational needs.
4. Students will learn to function and communicate effectively as an essential member of the diagnostic medical sonography team.
5. Students will develop ethical and moral practices consistent with the institution's policies as well as the Code of Ethics upheld within the field of Diagnostic Medical Sonography.
6. Students will develop critical thinking skills and will apply them in the classroom and the clinical situations. The Program Director will evaluate all course and clinical grades at the end of each quarter. A minimum grade of "C" in all academic courses and clinical practices is the required standard.
7. Students will demonstrate punctuality, dependability, initiative, and adaptability in their classroom and clinical performance.
8. Graduates will successfully pass the ARDMS examinations.
9. Graduates and employers will exhibit a high degree of satisfaction with the educational experience in postgraduate and employer surveys.
10. Graduates will continue their education to remain abreast of new developments in diagnostic medical sonography.

GENERAL/ VASCULAR SONOGRAPHY OPTION – COURSE DESCRIPTIONS

INTRODUCTION TO SONOGRAPHY

Credits: 2 Credits

Course Description:

In this course the student will prepare for the new and challenging demands of sonography training in a hospital. Clinical policies and procedures are emphasized. Course content includes materials emphasizing personal adaptation skills and staff development issues, nursing procedures, ethics, and skills to become a better student. An overview of basic sonographic terminology, technique and equipment form the framework for future study. There is a lab component. A final written and practical exam is given. Students not passing this course will need to retake this course prior to continuing on in the Diagnostic Medical Sonography major.

ABDOMINAL SONOGRAPHY I

Credits: 3 Credits

Course Description:

Anatomy, physiology, pathology and pathophysiology seen on normal and abnormal sonograms of the peritoneal space, pre-vertebral vessels and liver will be discussed. Students will become familiar with the clinical symptoms, lab values and specific ultrasound protocols for normal and abnormal cases. Students will take both a written and practical final exam.

ABDOMINAL SONOGRAPHY II

Credits: 3 Credits

Course Description:

Anatomy, physiology, pathology and pathophysiology seen on normal and abnormal sonograms of the kidneys, biliary system, pancreas, and spleen will be discussed. Students will become familiar with the clinical symptoms, lab values and specific ultrasound protocols for normal and abnormal cases. Students will take both a written and practical final exam.

ABDOMINAL SONOGRAPHY III

Credits: 3 Credits

Description:

Anatomy, physiology, pathology and pathophysiology seen on normal and abnormal sonograms of the adrenals, male pelvis, musculoskeletal, intraoperative, and pediatric specialty exams will be discussed. Students will become familiar with the clinical symptoms, lab values and specific ultrasound protocols for normal and abnormal cases.

BREAST SONOGRAPHY

Credits: 2 Credits

Course Description:

In this course the student studies the embryology, structure, physiology and pathology of the breast, and superficial structures. Normal, abnormal gross, cross-sectional and relational sonographic anatomy will be explored. Invasive and intraoperative sonographic techniques will be discussed as they relate to breast and thyroid sonography. The student will have the opportunity to demonstrate their knowledge of sterile technique.

INTRODUCTION TO FETAL

ECHOCARDIOGRAPHY

Credit: 3 Credits

Course Description:

Advanced study of the fetal heart to include normal anatomy and congenital heart disease. This course will cover embryology of the heart, the fetal echocardiography exam and protocols and congenital heart disease.

MEDICAL ULTRASOUND PRINCIPLES AND APPARATUS

Credits: 3 Credits

Course Description:

The purpose of this course is to enable students to become familiar with the physical principles governing the of medical ultrasound equipment. Emphases will be on diagnostic imaging systems, but students also will become acquainted with therapeutic devices, including shock wave as well as thermal delivery systems. Basic principles of acoustic transmission and reflection in tissues are covered at an elementary level. Design and performance of transducers, pulse-echo imaging equipment, Doppler and color flow equipment and physical therapy systems are emphasized. The physics leading to image artifacts is described, as are methods for evaluating performance of ultrasound devices. Finally, acoustical exposure measurements and levels from diagnostic equipment are discussed, as well as biological effects and risk.

OB/GYN SONOGRAPHY I

Credits: 3 Credits

Course Description:

This course focuses on the normal gross, relational and sonographic anatomy of the female pelvis. Included are discussions gynecologic pathologies and infertility. Physiology and related laboratory and clinical findings for disease processes are emphasized. Students will complete both a written and practical final exam. Students will complete both a written and practical final exam.

OB/GYN SONOGRAPHY II

Credits: 3 Credits

Course Description:

Labor, fetal presentation and fetal anomalies as visualized on ultrasound during the first trimester, second trimester, and third trimester will be discussed. Students will become familiar with technology. During this practicum, students will be assigned clinical competencies and objectives to complete.

OB/GYN SONOGRAPHY III

Credits: 2 Credits

Description:

This course will discuss the role of ultrasound in evaluating maternal complications in pregnancy, needle guidance procedures (CVS sampling, Amniocentesis, PUBS, therapy), and in monitoring high risk patients.

OB/GYN SONOGRAPHY IV

Credits: 3 Credits

Description:

This course will discuss the role of ultrasound in evaluating the fetus for various genetic syndromes and understanding inheritance patterns.

SONOGRAPHY CLINICAL EDUCATION I

Credits: 3 Credits

Course Description:

Students are scheduled for clinical practicum at participating clinical education centers. Clinical experience rotations for Practicum I include abdominal imaging, OB/GYN imaging and vascular technology. During this practicum, students will be assigned competencies and objectives to complete.

SONOGRAPHY CLINICAL EDUCATION II

Credits: 3 Credits

Course Description:

Students are scheduled for clinical practicum at participating clinical education centers. Clinical experience rotations for Practicum II include abdominal imaging, OB/GYN imaging and vascular technology. During this practicum, students will be assigned competencies and objectives to complete.

SONOGRAPHY CLINICAL EDUCATION III

Credits: 3 Credits

Course Description:

Students are scheduled for clinical practicum at participating clinical education centers. Clinical experience rotations for Practicum III include abdominal imaging, OB/GYN imaging and vascular technology. During this practicum, students will be assigned clinical competencies and objectives to complete.

SONOGRAPHY CLINICAL EDUCATION IV

Credits: 3 Credits

Course Description:

Students are scheduled for clinical practicum at participating clinical education centers. Clinical experience rotations for Practicum IV include abdominal imaging, OB/GYN imaging and vascular technology. During this practicum, students will be assigned clinical competencies and objectives to complete.

SONOGRAPHY CLINICAL EDUCATION V

Credits: 3 Credits

Course Description:

Students are scheduled for clinical practicum at participating clinical education centers. Clinical experience rotations for Practicum V include abdominal imaging, OB/GYN imaging and vascular technology. During this practicum, students will be assigned clinical competencies and objectives to complete.

SONOGRAPHY CLINICAL EDUCATION VI

Credits: 3 Credits

Course Description:

Students are scheduled for clinical practicum at participating clinical education centers. Clinical experience rotations for Practicum VI include abdominal imaging, OB/GYN imaging and vascular technology. During this practicum, students will be assigned clinical competencies and objectives to complete.

VASCULAR SONOGRAPHY I

Credits: 3 Credits

Course Description:

Peripheral Vascular direct and indirect arterial and venous, normal and abnormal will be discussed. Students will become familiar with the clinical symptoms and specific ultrasound protocols for normal and abnormal cases associated with peripheral vascular disease.

VASCULAR SONOGRAPHY II

Credits: 3 Credits

Course Description:

Hemodynamics and cerebrovascular anatomy, normal and abnormal will be discussed. Students will become familiar with the clinical symptoms and specific ultrasound protocols for normal and abnormal cases associated with cerebrovascular disease.

VASCULAR SONOGRAPHY III

Credits: 3 Credits

Course Description:

Abdominal, transplant organ, superficial part Doppler and advanced hemodynamics, normal and abnormal will be discussed. Students will become familiar with the clinical symptoms and specific ultrasound protocols for normal and abnormal cases associated with vascular disease.

SEMINAR IN ADVANCED MEDICAL IMAGING

Credit: 3 Credit

Course Description:

The student will be exposed to normal anatomy and pathology cases combining diagnostic medical sonography, computed sonography and magnetic resonance imaging. The student will be exposed to normal anatomy and pathology cases combining two-dimensional diagnostic medical sonography, three dimensional and four dimensional sonography techniques. The student will gain an understanding how diagnosis are made and patients are managed based on findings from the use of three dimensional and four dimensional imaging modalities.

SEMINAR IN ULTRASOUND RESEARCH/VASCULAR IV

Credit hours: 3 Credits

Course Description:

Students will discuss and review the entire vascular system, including anatomy, pathology, and pathophysiology. The student will review and perform the complete array of indirect and direct vascular sonographic examinations. The course will cover exam review material in anticipation of the Vascular Technology board examination.

SEMINAR IN MANAGEMENT AND EDUCATION IN MEDICAL IMAGING

Credit: 3 Credits

Course Description:

This course will familiarize the diagnostic medical sonography with educational and management issues in the profession. Students will problem solve management issues as they relate to diagnostic medical sonography and will explore educational strategies employed in ultrasound education. Students will participate in department quality assurance projects and educational course development projects.

SEMINAR IN PROFESSIONAL DEVELOPMENT

Credit hours: 3 Credits

Course Description:

This course will familiarize the diagnostic medical sonography student with the history of the profession and professional societies associated with the field of diagnostic medical sonography. Students will learn how professional societies influence practice in the field and how to write for grant funding from these societies.

INTRODUCTION TO NEUROSONOLOGY

Credits: 2 Credits

Course Description:

This course will cover the anatomy, physiology, pathology, pathophysiology and the sonographic appearance of the normal and abnormal fetal and neonatal brain. Students will become familiar with the normal ultrasound exam protocol and how to modify the exam for pathological conditions.

STUDENT LIFE IN MADISON

The University of Wisconsin Hospital and Clinics School of Diagnostic Medical Sonography is located on the western side of the University of Wisconsin-Madison campus on the shore of Lake Mendota in Madison, Wisconsin. The City of Madison supports a broad range of cultural events including concerts, exhibitions, plays, movies, and entertainment facilities that are available at prices compatible with a student's budget.

The City of Madison has a well-developed public transportation system, with bus services that traverse the city and surrounding areas. Opportunities for outdoor recreation both in the city and in the nearby countryside are plentiful. The University of Wisconsin maintains a 1240-acre arboretum that contains 25 miles of walking trails. Popular regional outdoor activities include sailing, hiking, ice-skating, cross-country skiing, bicycling, hunting, and fishing.

INTERNET INFORMATION

The University of Wisconsin Hospital and Clinics School of Diagnostic Medical Sonography has an internet webpage at www.uwhealth.org/ultrasoundschool.

In addition, the Commission on Accreditation of Allied Health Education Programs (CAAHEP) provides information about all accredited ultrasound training programs located within the United States on its website www.caahep.org. Additional information about careers in diagnostic medical sonography can be obtained on the Society of Diagnostic Medical Sonography website www.sdms.org.

Additional information about the University of Wisconsin – Milwaukee College of Health Sciences degree program may be accessed at <http://www.uwm.edu/chs>.