



NORCROSS INSTITUTE OF ALLIED HEALTH

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Catalog and Student Handbook - 2011

Healthcare Certificate Programs

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Welcome from the Program Director

Dear Student:

Welcome to the school of ultrasound diagnostic medical sonography at Norcross Institute of Allied Health.

Whether you are a registered student or a potential applicant for the next class, it is my sincere hope that you continue to pursue your dream of becoming a registered Diagnostic Medical Sonographer, and we can help you in fulfilling that goal.

Our commitment is to provide a professional curriculum that is student-centered and guided by our view that the sonographer plays a critical role as a member of the interdisciplinary health care team. Our program fosters professionalism, high ethical standards with a focus on integration of knowledge and critical thinking, our students will be able to adapt to future challenges in the delivery of health care. Our 24 months curriculum coupled with didactic and clinical competency based assessment and the block delivery of course material really provides the student with the tools to succeed.

Should you have additional questions, please do not hesitate to call or email our school administrator at 770-409-1075, or by email at norcrossinstitut@bellsouth.net.

Thanks,

Dr. Anthony E. Obazee, MD, RHE
Program and School Director

EDUCATIONAL GOALS

The goal of Norcross Institute of Allied Health is to provide affordable training of health care programs that will prepare students to take the examination given for national certification for the program of their choice. Qualified instructors in a small classroom setting will provide this training, which will allow more instructor/student interface and assistance.

In addition, Norcross Institute will provide the following:

- ❑ Necessary equipment and resources to enhance the learning experience for each student certificate & associate degree in Diagnostic Medical Sonography
- ❑ Provide certificate of completion for all other healthcare programs offered. Also, arrange for all examinations with the National Healthcare Association, as well as other examining associations.
- ❑ Assist with placement of all students upon their receipt of national certification.

There is indication of a need for more certified healthcare professionals and Norcross Institute's training programs will assist in meeting the demand.

Dr. Anthony Obazee, MD
Program Director

CERTIFICATION PREPARATION PROGRAMS

Norcross Institute, which is a non-main campus facility, is authorized under the Non-Public Post Secondary Educational Institutions Act of 1990.

Offers excellent affordable healthcare programs that prepare students to take the national certification examination. Certified instructors in small classroom settings teach all courses.

PROGRAMS OFFERED

Diagnostic Medical Sonography (DMS)

Body organs are viewed with high frequency sound waves; this is a non-invasive technique. Students who complete this program can perform their duties in diagnostic labs, trauma centers, operating rooms, interventional suites, trauma centers, labor and delivery facilities, and at the bedside. Sonographers interpret the medical images produced through Sonography.

Program Duration: 24 months.

Medical/Clinical Laboratory Assistant (MLA/CLA)

The Medical Laboratory Assistant is the entry-level position in the field of Medical Technology. Chemical, microbiologic and microscopic laboratory tests are performed by medical technicians according to standardized laboratory practices and procedures. Medical Laboratory Assistant collects and examines blood, prepare and stain slides for microorganisms and analyze chemical components. Some technicians specialize in microbiology, hematology, parasitology and other areas. Most graduates work in hospitals, clinics and research laboratories.

Accreditation: After completing this course, student will be eligible to sit for the National Certification Exam with the National Health Career Association. (CMLA).

Duration: 12 months

REGISTRATION PROCEDURE

All prospective students must:

- Complete an application and submit a \$25.00 non-refundable application fee.
- Have an interview with the Program Director
- Sonography Program requires at least one or two year's college science preparatory courses.
- Mandatory entrance examination

PROFESSIONAL LIABILITY INSURANCE

Norcross Institute of Allied Health carries comprehensive professional liability insurance. This insurance is a requirement and is offered to all students who enroll in the healthcare program. Each student is charged \$50.00 per program registration.

HEALTH/MEDICAL INSURANCE

Norcross Institute of Allied Health does not provide individual student health and medical insurance. While enrolled in our programs, each student is responsible for all costs associated with any medical procedure and maintaining health and medical insurance. Although it is not required that students provide proof.

PROGRAM COMPLETION REQUIREMENTS

Norcross Institute of Allied Health requires every student to obtain the following in order to be considered for program completion:

- 75% passing grades
- Attend $\frac{3}{4}$ of classroom sessions and clinical sessions
- All fees must be paid in full

BOOKSTORE INFORMATION (Suggested bookstores)

- DeKalb Bookstore
448 North Indian Creek Drive
Clarkston, GA 30035
Telephone 404-294-8635

- Emory Medical Bookstore
605 Asbury Circle
Atlanta, GA 30322
Telephone 404-727-0552

Shop online at www.Ebay.com, www.amazon.com, www.halfpricebooks.com, www.chegg.com, www.bigwords.com, www.bensbargins.net, www.alibris.com, and www.half.com

CONDUCT

In the healthcare profession, honesty, integrity, good work ethics and clear intent are necessary behaviors. Norcross Institute expects all of its students to behave in a professional and courteous manner at all times. A student may be placed on probation indefinitely, suspended for one to two days, or dismissed from their technical program for such conduct as those listed, but not limited to:

- Attending class under the influence alcohol or illegal drugs
- Use, consumption or distribution of alcohol or illegal drugs on school premises
- Possession or use of any weapon on school premises – including parking lot
- Sexual activity or harassment on school premises
- Violation of school safety regulations
- Use of inappropriate language or profanity
- Behavior which is deemed by the program director to be inconsistent with the standards of the school and the healthcare profession

DISMISSAL

Students can be dismissed from their program for any of the following reasons:

- Inappropriate or disorderly conduct or any behavior which causes public embarrassment to the school or the healthcare profession
- Poor academic performance or a failing grade in any segment of their program
- Failure to meet financial obligations to the school
- Excessive absences (More than 10% of total classes)

- Failure to comply with policies outline in this catalog, and the enrollment agreement

ROTATIONS

Norcross Instituted of Allied Health is affiliated with many hospitals and private ultrasound practices. You will have rotations in specialized areas of ultrasound including abdomen, OB-GYN, cardiac and vascular ultrasound. During these rotations, students gain experience in ultrasound and vascular laboratories. During all clinical rotations, you will work under the supervision of highly qualified radiologist, obstetricians, vascular surgeons, Sonographers and vascular technologists.

GRADING OR EVALUATION

Norcross Institute of Allied Health Uses evaluative tools that include:

- Written examination
- Demonstration of skills
- Self-assessment exercises
- Faculty reviews

Our system of evaluation provides students and faculty with a comprehensive look at individual performance, allowing students who are experiencing academic difficulty to counseling opportunities.

ADMISSIONS

Prerequisites:

High school Diploma or equivalent prerequisite courses must be completed and final grade received before the program application deadline.

Algebra or higher-level math:

A minimum of one semester college-level algebra is required; algebra is the minimum level mathematics course acceptable; a higher-level math course will also satisfy the requirement.

English/Speech/Communication Skills:

A minimum of one semester of college-level English, speech or communications is required; this requirement may be met by a variety of courses, including English, speech, composition or communications.

Physics:

A minimum of one semester college-level physics is required.

Anatomy and Physiology:

Two semesters of college-level anatomy and physiology are required. Or, you may choose to complete one semester of college-level anatomy and physiology and one semester of college-level human biology.

Medical Terminology:

One medical terminology course is required; it must be an official academic course resulting in a grade on a school transcript; courses are available from Norcross Institute and Allied Health, community and technical colleges.

Patient Care:

One patient care course is required; it must be an official academic course resulting in a grade on a school transcript; on-the-job training is not acceptable; courses are available from Norcross Institute of Allied Health, community and technical colleges; demonstration of patient care experience following the course is encouraged.

English Fluency:

Fluency in written and spoken English is essential to succeed in the program and to ensure patient safety. If English is a second language, you must be able to demonstrate fluency.

Immunization Record:

For the protection of patients, students and employees, and in compliance with state regulations, you must show proof of the following immunizations before you begin a program.

- Tuberculin test in the past six months
- Varicella, rubella and rubeola immunity
- Up-to-date diphtheria and tetanus shots
- Hepatitis B vaccinations or signed declaration

Documentation of Vaccinations must be provided to Norcross Institute of Allied Health prior to the start of class.

CPR

You must hold a current, valid cardio-pulmonary resuscitation certification at the time you begin the program and keep the certification current throughout your enrollment in the program.

Medical Insurance

You must have medical insurance coverage during the program. Evidence of medical coverage must be provided when your educational program begins.

Background Check

You must pass a criminal background check and/or drug screening required by state law, prior to enrollment.

Student Responsibilities

Students are expected to attend all scheduled classes, examinations and assigned clinical rotations unless they are given an approved absence.

Equal Opportunity

Norcross Institute of Allied Health upholds all federal and state laws that preclude discrimination based on race, sex, age, religion, national origin, marital status, sexual orientation, disabilities or veteran's status.

You must maintain an accumulative GPA of 3.0 or above in each course within the program. You required to exhibit professional and ethical conduct at all times.

Technical Standards

Norcross Institute of Allied Health programs accept students who are highly qualified for its programs. To be considered for admittance you should exhibit strong qualifications for health profession you wish to pursue. Applications to programs must possess the following general qualities.

- Critical thinking skills
- Sound judgment
- Emotional stability and maturity
- Empathy for others
- Physical and mental stamina
- Ability to learn and function in a variety of settings

In addition to the general standards described above, the Sonography Program requires the following physical abilities:

- Lift more than 50 pounds routinely.
- Push and pull routinely
- Kneel or squat routinely.
- Have full use of both hands and wrists.
- Adequately view images, including color distinctions.
- Distinguish audible Doppler signals.
- Work standing 80 percent of the time.

- Care for and communicate effectively with patients.
- Assist patients on and off examining tables.
- Communicate effectively with staff.
- Accurately perform the sequential steps in a sonography examination.

You must be able to perform the essential functions of the profession and meet the standards of the curriculum. To seek exceptions to these standards or reasonable accommodations, you should initiate a request with the program director.

Class Attendance Policy

ATTENDANCE: Each class is scheduled to study new and necessary material. Therefore, due to the limited class time, each student is allowed to miss ONLY THREE (3) CLASSES DURING EACH SEMESTER.

NOTIFICATION OF ABSENCE: Should you need to be excused from a class, you MUST notify your instructor at least four (4) hours prior to your scheduled class. Failure to do so will count as an “unexcused absence” and will NOT be made up. Our Institute trusts each student to have your Instructor’s telephone number, email address, cell phone number and/or fax. We request that you only use them to contact your instructor, and **DO NOT** give this information out to other individuals with out the permission of each instructor.

EMERGENCIES WILL BE CONSIDERED FOR MAKE UP CLASSES PROVIDED YOU COMMUNICATE WITH YOUR INSTRUCTOR AND OR THE SCHOOL. (The school telephone number is listed above in our letterhead).

EMERGENCIES WOULD BE CONSIDERED: SUDDEN ILLNESS, EMERGENCY ILLNESS OF A FAMILY MEMBER, AUTOMOBILE ACCIDENT, OR OTHER SITUATION THE DIRECTOR AND/OR YOUR INSTRUCTOR DEEM APPROPRIATE.

Instructor’s Cancellation of Class: Should an instructor need to cancel or reschedule a class, you will be notified in advance, as to when the make up class will be held. To remain prepared, assignments for this class should continue on your own.

LEAVE OF ABSENCE

In the event it should become necessary for circumstances beyond one’s control, and you MUST discontinue classes for a BRIEF time, you must submit with written notification the reason (an attending Physician’s

statement is necessary for all medical reasons). You must include the date you need to suspend your attendance, and when you expect to return. Your tuition status will be discussed with you at the time of termination with the Director.

COURSE DESCRIPTIONS

MEDICAL LABORATORY ASSIST/CLINICAL LABORATORY ASSISTANT

This course provides an introduction to laboratory medicine, including an overview of the role of the medical laboratory assistant, organization of the hospital and laboratory, general techniques used for routine laboratory procedures, laboratory mathematics, medical terminology, quality assurance, safety, professional ethics and an overview of each area within the laboratory.

HEMATOLOGY/URINALYSIS

This clinical laboratory science course provides students with an in-depth knowledge of hematology and urinalysis. The course content deals with the morphology of blood and blood forming tissues and the composition of urine and the functions of the urinary system. The physiology and pathology of both subjects are also studied. The laboratory component of the course is utilized to develop the skills and competencies required to identify cells and perform laboratory analysis with instruction in the proper use of the various instrumentations involved in these studies.

CLINICAL MICROBIOLOGY I

Clinical Microbiology I is a study of microorganisms and their relationship to diseases and the scientific and laboratory basis for Clinical Microbiology. Discussion is centered on bacteriology, laboratory cultivation, methods of identification, antimicrobial susceptibility testing, molecular methods for microbial identification and serologic diagnosis of infectious disease. Diagnosis of infection by organ system is stressed. The laboratory component is designed to develop the basic skills and competencies required to work with microorganisms. Laboratory exercises include microscopy, staining, culture techniques, media, culture identification, susceptibility testing and aseptic technique.

CLINICAL MICROBIOLOGY II

Clinical Microbiology II is a continuation of the study of microorganisms and their relationship to disease. The emphasis of this course is on the identification and susceptibility testing of aerobic and anaerobic bacteria, mycobacteria, human parasites, fungi and viruses. The laboratory component is designed to develop the skills and competencies to isolate, identify and test for the antimicrobial susceptibility of the organisms.

CLINICAL CHEMISTRY

This clinical laboratory science course involves the field of clinical chemistry and testing of blood and body fluids. It deals with the biochemistry of body systems and the relationship of disease and clinical testing. The laboratory component of the course is utilized to develop the skills and competencies required to operate, standardize and understand the instruments utilized in performing the analysis. The use of quality control procedures is emphasized with each laboratory analysis. Students are also given instruction in the proper use of the various instrumentations involved in these studies.

IMUNOHEMATOLOGY AND HEMOSTASIS

This course emphasizes the principles and practices of blood banking and blood coagulation. Course content covers the concepts of genetics, pre-transfusion testing, transfusion therapy, donor selection and blood processing. Techniques are introduced with theory stressing the pathological conditions that affect the testing procedures. Results are correlated with the investigation and resolution of blood compatibility problems and reactions. The laboratory component of the course is utilized to develop the skills and competencies required to perform blood- banking procedures and to maintain records for the efficient operation of a blood bank. The student will comprehend the principles of homeostasis, the processes involved in the initiation of coagulation, and the laboratory procedures used in the evaluation of hemostatic disorders.

PHLEBOTOMY

This course consists of both didactic and clinical instruction in the collection of blood specimens for diagnostic testing. Basic concepts in infection control, personal safety, professional conduct and the medicolegal aspects of phlebotomy will be correlated to clinical

applications as they relate to laboratory testing and patient conditions. Clinical instruction and practice are included.

PATHOLOGY AND CLINICAL CORRELATIONS

This course is in an overview of the pathology of the major body systems to help the student understand the basic cause and effect of disease and correlate the pathologic features with their clinical effects. Basic concepts underlying various pathologic processes will be stressed. Clinical correlations will be presented between the pathologic processes studied and the laboratory findings using case studies.

LABORATORY INFORMATION SYSTEMS

Emphasis is placed on the laboratory use of computers for patient information, hardware and information systems concepts, database management, and laboratory instrumentation software. This course will provide a foundation in basic computer skills that are utilized in a modern Health Care Facility.

IMMUNOLOGY

This course is an introductory level course that covers the basic immunologic concepts of cells and humoral products of the immune system, the genetic control of immunity and generation of diversity, and antigen-antibody reactions. These basic concepts will be correlated to clinical applications as they relate to laboratory testing manifestations of disease, such as autoimmunity, hypersensitivity, transplantation, tumor immunology and immunodeficiency.

MEDICAL LABORATORY EXTERNSHIP I

This externship is practiced at an affiliated hospital laboratory. This experience provides the students with an orientation to the laboratory and with an opportunity to demonstrate and develop their skills and competencies under the direction and supervision of the laboratory staff instructors. Each student rotates through the blood bank, clinical chemistry, hematology, coagulation, immunology/serology, microbiology and urinalysis departments.

MEDICAL LABORATORY EXTERNSHIP

This externship is practiced at an affiliated hospital laboratory. This experience provides the students with the opportunity to practice the skills they have learned and to learn new skills and competencies under the direction and supervision of the laboratory staff instructors. Each student rotates through the blood bank, clinical chemistry, hematology, coagulation immunology/serology, microbiology and urinalysis departments of the laboratory.

PATIENT CARE TECHNICIAN EXTERNSHIP

This externship is practiced with patients that can not do for themselves while they are in hospitals, rehabilitation clinics, assisted living facilities, nursing homes or long-term care facilities. PCT may assist patients with tasks such as eating, getting out of bed, taking a bath, and brushing their teeth and hair. Patient Care Technicians work along side doctors, nurses and other healthcare professionals to provide direct patient care in a variety of healthcare environments. The Patient Care Technician plays a vital role in the healthcare delivery setting often having more patient contact than any other team member including doctors and nurses.

DMS 3500: Clinical Practicum 1 (5 Credit Hours)

1.0 GENERAL INFORMATION

1.1 Catalog Description

Students are assigned educational experiences in clinical sonographic imaging at various clinical sites.

1.2 Course Rationale

Clinical assignments are structured to give the student a broad variety of sonographic observations and scanning experiences under the supervision of practicing sonographers and physicians. The students are expected to participate in all aspects of the sonographic examinations as delineated by the clinical site's protocol. The sonographer must be able to prepare the patient for the examination, obtain the medical history, select the appropriate equipment, follow the established examination protocols, record diagnostic images, discuss the case with the supervising physician, and understand the medical record filing system of the clinic.

1.3 General Course Objectives

Upon completion of this course, the student will be able to:

- A. Demonstrate knowledge and understanding of related imaging, laboratory, and testing procedures as they contribute to the clinical evaluation of anatomy and pathology to include: patient medical history and physical examination, differential diagnosis, diagnostic protocols, basic principles and procedures of pertinent protocols, and the role of sonography in patient management.
- B. Demonstrate effective oral and written communications skills by using appropriate medical terminology.
- C. Demonstrate an understanding of acoustic physics and its role in the analysis of sonographic image artifacts as they relate to sonographic equipment, patient care, and pathology.
- D. Demonstrate knowledge of ultrasound instrumentation, instrument options, operator controls, principles of instrument control, and modes of operation.

- E. Demonstrate an understanding of patient transportation, standards of patient care personal health, patient psychological support, patient rights, and patient comfort.
- F. Demonstrate an acceptable level of professional judgment, discretion, professional interaction skills, and ethical performance of duties.
- G. Exhibit an understanding of medicolegal principles associated with patient care.
- H. Be able to sonographically locate and obtain images of the longitudinal and transverse sections of the following organs: liver, gallbladder, left & right kidneys, pancreas, spleen, abdominal aorta, and inferior vena cava.

2.0 INSTRUCTIONAL METHODOLOGY

2.1 General Techniques

The following general teaching techniques will be used during this course:

- A. demonstration and observation
- B. discussion
- C. practice
- D. assigned readings from professional journals and textbooks

2.2 Resource-Based Techniques

Active participation, observation, and scanning using standard sonographic equipment in the assigned clinic. Film portfolios will be developed by the student to document their progress and to provide images for self-study.

3.0 INSTRUCTIONAL MATERIALS/SUPPLIES

3.1 References – Print Materials

The following print materials relate to this course. Note that the item marked by an asterisk (*) is required for use during this course.

- A. *DIAGNOSTIC MEDICAL SONOGRAPHY: Obstetrics and Gynecology, Berman MC & Cohen HL; 2nd Edition; Lippincott, 1997; ISBN: 0-397-55261-0.
- B. *DIAGNOSTIC MEDICAL SONOGRAPHY: Abdomen and Superficial Structures, Kawamura DM; 2nd Edition; Lippincott, 1997; ISBN: 0-397-55263-7.
- C. *ULTRASONOGRAPHY: An Introduction to Normal Structural and Functional Anatomy. (2nd ED). (2004). Curry, RA and Tempkin, BB. W. B. Saunders: Philadelphia; ISBN: 0-7216-9780-1.
- D. *ESSENTIALS OF ULTRASOUND PHYSICS: Zagzebski JA; Mosby, 1996; ISBN: 0-8151-9852-3.
- E. FETAL SONOGRAPHY: DuBose T. J., W. B. Saunders, 1996; ISBN: 0-7216-5432-0 (Available at the UAMS Library & Department of Radiologic Technology Library)

4.0 GENERAL EVALUATION PROCEDURES

4.1 Student Evaluation Procedures

- A. Students will be evaluated at the end of each clinical rotation by a Clinical Instructor at the clinic to which the student is assigned. All clinical evaluations will be averaged for the Clinical Evaluation grade at the end of each semester.
- B. Student image portfolios will include the student-generated images described in detail on page number nine. These images must demonstrate appropriate planes of view, content, labels, and quality in order to receive proper credit. Additional images, as recommended by the Clinical Instructor(s), should also be included. The portfolio will be turned in for evaluation at the end of each semester and will be counted as part of the clinical grade.
- C. A written clinical final examination covering daily sonographic laboratory start-up, operation, and shutdown, patient care, and laboratory examination protocols will be administered at the end of each semester.
- D. Film critique will be part of the clinical final examination. This will evaluate the student's ability to recognize normal sonographic anatomy and related pathology.
- E. The letter grade for this course will be calculated as follows:

Clinical Grade of Record	30%
Case participation (number)	30%
Final Exam/Film Critique	35%
Image Portfolio	5%
	100%

F. The grading scale for determining letter grades in all courses are as follows:

Letter Grade	Percentage
A	90 to 100%
B	80 to 89%
C	70 to 79%
D	60 to 69%
F	Below 60%

G. Students will demonstrate their clinical competency by completing 13 clinical competency evaluations during the first three semesters of the program. **These evaluations are mandatory for graduation from the DMS program and must be completed at the end of the semester.** Only a properly certified sonographer registered with the American Registry of Diagnostic Medical Sonographers (ARDMS) will sign the STUDENT COMPETENCY EVALUATION form.

4.2 Clinical Evaluation Procedures

Students will evaluate the Clinics using the STUDENT'S EVALUATION OF THE CLINICAL ROTATION form.

4.3 Performance: Lab, Clinic, and Project Evaluation

A. The student's performance will be evaluated at the end of each clinical rotation by the Clinical Instructor of Record using a CLINICAL INSTRUCTOR'S EVALUATION OF THE STUDENT form. These evaluations will cover the objectives of this course, including: equipment start-up and shut-down, transducer selection, routine cleaning and care of equipment, patient care, taking the medical history, medical records, sonographic examination protocols, and student interactions with the patients and clinical staff. Each clinic will have varying equipment, exam protocols, medical record procedures, and other unique conventions, which the student will be expected to

B. In the first semester the student will be expected to know each assigned clinic's protocol for the following examinations:

1. Gall bladder
2. Liver
3. Renal
4. Pancreas
5. Aorta
6. spleen
7. pelvic (Transabdominal & Transvaginal)

4.4 Make up of Clinical Hours

A. The student may request to arrange a make up of clinical hours after the student's return to the department.

B. Outline of steps to be taken regarding the make up of clinical hours:

- I. notify the Clinical Instructor and the Program Director that you will be unable to be in clinic on the scheduled day
- II. contact the Clinical Instructor to schedule the make up hours
- III. agree on a time for the make up clinical hours
- IV. attend the make-u clinic as agreed
- V. failure to attend a scheduled make-up day will result in an additional clinical absence that will also have to be made up

5.0 GENERAL PROCEDURES

A. Students are expected to participate in the clinic under the supervision of the Clinical Instructor(s).

B. The student may request a student/instructor conference concerning any clinical rotation, etc. by contacting the Diagnostic Medical Sonography Program Director and requesting an appointment. These conferences should be scheduled for your benefit since the Clinical Instructors are here to help.

C. Any contested clinical evaluation must be resolved within two weeks after the return of the graded item to the student. After this time, all grades are final.

6.0 CLINIC ATTENDANCE/CONDUCT/DRESS POLICY

6.1 General Remarks

Students should attend every clinical session. Students who miss more than 16 clinical hours (2 days) per semester will make up the missed time at the end of the semester. If unable to attend a clinical session, common courtesy dictates that the Clinical Instructor and Diagnostic Medical Sonography Program Director receive prior notification of the impending absence. If a student is not present in clinic at the appropriate times, and does not notify both the Clinical Instructor of Record and the DMS Program office PRIOR TO the program faculty's discovery of the absence, an automatic five (5) points will be deducted from the Clinical Practicum grade for ***each occurrence***.

6.2 Clinical Absences and Tardiness Grading Effects

Dependability and promptness are essential to effective clinical work; therefore, tardiness and absences will affect your clinical evaluations and final clinical grade. In addition, excessive clinical absences will lower the number of clinical cases the student must document, thereby lowering the clinical grade. The student should also remain cognizant that Clinical Affiliates are also potential employers of graduates. Work habits will be closely observed in the clinical settings.

6.3 Conduct/Dress

Student conduct and dress should reflect an awareness of the student's role as an aspiring health care professional and as a representative of the Diagnostic Medical Sonography Program.

7.0 DUE DATES/DEADLINES

All clinical paperwork, competency evaluations, and image portfolios will be due the last day of that clinical rotation.

DIAGNOSTIC MEDICAL SONOGRAPHY

Clinical Image Portfolios

- I. Students will assemble a portfolio, consisting of 94 pictures, of their ultrasound images taken during the first three Clinical Practicums of the DMS program. The portfolios are required for graduation and will make up part of each student's clinical grade for that semester. Portfolios for Clinical Practicums I, II, & III must be completed by the end of the semester.

- II. Each portfolio will consist of longitudinal & transverse images of the following anatomy:
 1. Abdomen:
 - A. Liver (Right & Left Lobes)
 - B. Gallbladder
 - C. Common Bile Duct
 - D. Right & Left Kidneys
 - E. Pancreas
 - F. Spleen
 - G. Aorta
 - H. Inferior Vena Cava

 2. Gynecology (Transabdominal & Transvaginal):
 - A. Non-gravid Uterus
 - B. Cervix
 - C. Endometrium
 - D. Right & Left Ovaries

 3. Obstetrics
 - A. First Trimester Pregnancy
 1. Gravid Uterus
 2. Cervix
 3. Right & Left Ovaries
 4. Gestational Sac
 5. Yolk Sac
 6. Crown-Rump Length
 7. Gestational Sac Diameter
 8. Embryonic Heart Rate

 - B. Second and Third Trimester Pregnancy
 1. Uterine Fundus
 2. Cervix
 3. Placenta
 4. Four-Quadrant Amniotic Fluid
 5. Biparietal Diameter
 6. Transv. Head Circumference
 7. Coronal Head Circumference
 8. Abdominal Circumference
 9. Femur Length
 10. Cerebellum
 11. Cisterna Magnum
 12. Right & Left Kidneys
 13. Complete Spine
 14. Umbilical Cord Insertion
 15. Face & Lips
 16. Coronal Trunk (Heart, Stomach, Bladder)
 17. Hands & Feet
 18. Size/Age Report Sheet

 4. Small Parts
 - A. Thyroid (Right & Left Lobes, Isthmus)

- B. Scrotum (Right & Left Testicles, Right & Left Epididymides)
- C. Breast (Right & Left)

III. Images to be used for the portfolio must be of actual patients scanned in the clinics. The images will be clearly labeled and stored in a film jacket that has the student's name printed on the outside and a numbered list of images the student wants to submit for grading. In order to keep the clinical site's film costs at a reasonable level, please put as many images as possible on one sheet of film.

DMS 3600: Clinical Practicum II (6 Credit Hours)

1.0 GENERAL INFORMATION

1.1 Course Rationale

Clinical assignments are structured to give the student a broad variety of sonographic observations and scanning experiences under the supervision of practicing sonographers and physicians. The student will be expected to participate in all aspects of the sonographic examinations as delineated by the clinical site's protocol. The sonographer must be able to prepare the patient for the examination, obtain the medical history, select the appropriate equipment, follow the established examination protocols, record diagnostic images, discuss the case with the supervising physician, and understand the medical record filing system of the clinic. During this course the student is expected to perform complete, basic examinations, including the gall bladder, biliary system, hepatic, renal, aortic, pancreatic, splenic, pelvic (Transabdominal & Transvaginal), obstetrical, and superficial structures (thyroid, breast, scrotal) examinations.

1.2 General Course Objective

Upon completion of this course, the student will be able to:

- A. Demonstrate knowledge and understanding of related imaging, laboratory, and testing procedures as they contribute to the clinical evaluation of anatomy and pathology to include: patient medical history and physical examination, differential diagnosis, diagnostic protocols, basic principles and procedures of pertinent protocols, and the role of sonography in patient management.
- B. Demonstrate effective oral and written communications skills using appropriate medical terminology.
- C. Demonstrate understanding of acoustic physics and the analysis of sonographic artifacts as they relate to sonographic equipment, patient care, and pathology.
- D. Demonstrate knowledge of ultrasound instrumentation, instrument options, operator controls, principles of instrument control, and modes of operation.
- E. Demonstrate an understanding of patient transportation, standards of care, personal health, psychological support, patient rights, and patient comfort.
- F. Demonstrate an acceptable level of professional judgment, discretion, professional interaction skills, and ethical performance of duties.

- G. Exhibit an understanding of medicolegal principles associated with patient care.
- H. Be able to perform complete sonographic examinations of the following organs: liver, gallbladder, biliary system, left & right kidneys, pancreas, spleen, abdominal aorta, inferior vena cava, uterus, ovaries, fetal anatomy, thyroid, breast, & scrotum.

2.0 INSTRUCTIONAL METHODOLOGY

2.1 General Techniques

The following general teaching techniques will be used during this course:

- A. Demonstration and observation
- B. Discussion
- C. Practice
- D. Assigned readings from professional journals and textbooks may be required.

2.2 Resource-Based Techniques

Active participation, observation, and scanning using standard sonographic equipment in the assigned clinic. Film portfolios will be developed by the student to document their progress and to provide images for self-study.

3.0 INSTRUCTIONAL MATERIALS/SUPPLIES

3.1 References – Print Materials

The following print materials relate to this course. Note that the item marked by an asterisk (*) is required for use during this course.

- A. *DIAGNOSTIC MEDICAL SONOGRAPHY: A Guide to Clinical Practice; Volume 1: Obstetrics and Gynecology. Berman, MC; J.B. Lippincott Company, Philadelphia, 1997; ISBN: 0-397-55261-0.
- B. *DIAGNOSTIC MEDICAL SONOGRAPHY: A Guide to Clinical Practice; Volume 2: Abdomen & Superficial Structures. Kawamura, DM; J.B. Lippincott Company, Philadelphia, 1997; ISBN: 0-397-55263-7.
- C. *ULTRASONOGRAPHY: AN INTRODUCTION to NORMAL STRUCTURE and FUNCTIONAL ANATOMY. Curry, RA and Tempkin, BB. W.B. Saunders, Philadelphia, 1995; ISBN: 0-7216-4585-2.

- D. *FETAL SONOGRAPHY. DuBose, TJ. W.B. Saunders, Philadelphia, 1996; ISBN: 0-7216-5432-0.
- E. *ULTRASOUND EXAMINATION GUIDELINES. Society of Diagnostic Medical Sonographers. Dallas, 2000-2001. Item #3301.
- F. INTRODUCTION to ULTRA SONOGRAPHY and PATIENT CARE: Craig, M. W.B. Saunders, 1993; ISBN: 0-7216-4229-2.

4.0 GENERAL EVALUATION PROCEDURES

4.1 Student Evaluation Procedures

- A. A Clinical Instructor at the clinic(s) to which the student is assigned will evaluate student at the end of each rotation. All evaluations will be averaged for the Clinical Grade of Record at the end of each semester.
- B. Student image portfolios will include student-generated images described on page number six. These images must demonstrate appropriate planes of view, content, and quality in order to receive proper credit. Additional images, as recommended by the Clinical Instructor(s), should also be included. The portfolio will be turned in for evaluation at the end of each semester.
- C. A written final examination covering the Society of Diagnostic Medical Sonographers (SDMS) Ultrasound Examination Guidelines for the performance of abdominal, gynecological, obstetrical, and superficial structures examinations, daily sonographic laboratory start-up, operation, and shutdown, and patient care will be administered at the end of the last clinical rotation.
- D. Film critique will be part of the final examination. This will evaluate the student's ability to recognize sonographic anatomy and pathology.
- E. The letter grade for this course will be calculated as follows:

Clinical Grade of Record	25%
Case participation (number)	25%
Final Exam/Film Critique	25%
Image Portfolio	25%
	100%

- F. The grading scale for determining letter grades in this course is as follows:

A	100 – 93%
B	92 – 84%
C	83 – 75%
F	74 – 0%

- G. Students will demonstrate their clinical competency by completing 13 clinical competency evaluations during the first three semesters of the program. **These evaluations must be completed by the end of Clinical Practicum 2.** Only a Diagnostic Medical Sonographers (ARDMS) will sign the STUDENT COMPETENCY EVALUATION form.

4.2 Clinical Evaluation Procedures

Students will evaluate the Clinics using the Clinical Rotation Evaluation form.

4.3 Performance: Lab, Clinic, and Portfolio Evaluation

The student's performance will be evaluated at the end of each clinical rotation by the Clinical Instructor(s) using the CLINICAL INSTRUCTOR'S EVALUATION OF THE STUDENT form. These evaluations will cover the objectives for this course, including: equipment start-up and shut-down, transducer selection, routine cleaning and care of equipment, patient care, medical history, medical records, sonographic examination protocols, and student interactions with the patients and clinical staff. Each clinic will have varying equipment, exam protocols, medical record procedures, and other unique conventions, which the student will be expected to master during a given rotation.

During the summer semester, the student will be expected to competently perform the following examinations according to the Society of Diagnostic Medical Sonographers (SDMS) Ultrasound Examination Guidelines. Independent performance will be verified by the respective clinical instructors and documented on the Student Competency Evaluation forms.

- A. Gallbladder
- B. Liver
- C. Renal
- D. Pancreas
- E. Aorta
- F. Spleen
- G. Pelvis (non-pregnant) Transabdominal & Transvaginal
- H. Obstetrical
- I. Superficial Structures (Thyroid, Testicular, Breast)

4.4 Make up of Clinical Hours

- A. The student may request to arrange a make up of clinical hours after the student's return to the department.
- B. Outline of steps to be taken regarding the make up of clinical hours:
 - I. Notify the Clinical Instructor and the Program Director that you will be unable to be in clinic on the scheduled day.
 - II. Contact the Clinical Instructor to schedule the make up hours.
 - III. Agree on a time for the make up clinical hours.
 - IV. Attend the make up clinic as agreed.
 - V. Students who schedule a make up day and then miss that day will have to make up two days, the original absence plus the missed make up day.

5.0 GENERAL PROCEDURES

- A. Students are expected to participate in the clinic under the supervision of the Clinical Instructor(s).
- B. The student may request a student/instructor conference concerning any clinical rotation, etc. by contacting the Diagnostic Medical Sonography Program Director and requesting an appointment. These conferences should be scheduled for your benefit since the Clinical Instructors are here to help.
- C. Any contested clinical evaluation must be resolved within two weeks after the return of the graded item to the student. After this time, all grades are final.

6.0 CLINIC ATTENDANCE/CONDUCT/DRESS POLICY

6.1 General Remarks

Students should attend every clinical session. **Students who miss more than 16 clinical hours (2 days) will be required to make up the missed hours.** Failure to make up the missed clinical time will result in a grade of Incomplete (I) for the semester. If unable to attend a clinical session, common courtesy dictates that the Clinical Instructor **and** Diagnostic Medical Sonography Program Director receive prior notification of the impending absence. **If a student is not present in clinic at the appropriate times and does not notify both the Clinical Site and the DMS Program office PRIOR TO the program faculty's discovery of the absence, an automatic five (5) points will be deducted from the final Clinical Practicum grade for each occurrence.**

6.2 Clinical Absence and Tardiness Grading Effects

Dependability and promptness are essential to effective clinical work; therefore, tardiness and absences will affect your clinical evaluations and your grade. Excessive clinical absences will also lower the number of cases a student observes. The student should be aware that Clinical Affiliates are also potential employers of graduates. Work habits will be closely observed in the clinical settings.

6.3 Conduct/Dress

Student conduct and dress should reflect an awareness of the student's role as an aspiring health care professional and as a representative of the Diagnostic Medical Sonography Program of the Department of Radiologic Technology.

7.0 DUE DATES/DEADLINES

All clinical paperwork, competency evaluation, and image portfolios will be due the last day of the clinical practicum.

8.0 SESSION SCHEDULE

8.1 General Remarks

Clinical session schedules will be distributed by the DMS Program Director.

DIAGNOSTIC MEDICAL SONOGRAPHY

Clinical Image Portfolios

- I. Students will assemble a portfolio of their ultrasound images taken during the first three Clinical Practicums of the DMS program. The portfolios are required for graduation.
- II. The portfolios will be assembled with images related to the courses taught during the semester.
 1. Clinical Practicum I, - Abdomen
 2. Clinical Practicum II, - Abdomen, Gynecology & Obstetrics
 3. Clinical Practicum III, - Abdomen, Gynecology & Obstetrics, & Superficial Parts
- III. Each portfolio will consist of longitudinal and transverse images of the following anatomy:
 1. Abdomen:

A. Liver (Right & Left Lobes)	E. Pancreas
B. Gallbladder	F. Spleen
C. Common Bile Duct	G. Aorta
D. Right & Left Kidneys	H. Inferior Vena Cava
 2. Gynecology:

A. Non-gravid Uterus	C. Right & Left Ovaries
B. Cervix	D. Endometrium
 3. Superficial Parts:
 - A. Thyroid (Right & Left Lobes, Isthmus)
 - B. Scrotum (Right & Left Testicles, Epididymis)
 - C. Breast (Right & Left)
 4. Obstetrics
 - A. First Trimester Pregnancy

1. Gravid Uterus	5. Yolk Sac
2. Cervix	6. Crown-Rump Length
3. Right & Left Ovaries	7. Gestational Sac Diameter
4. Gestational Sac	8. Embryonic Heart Rate
 - B. Second and Third Trimester Pregnancy

1. Uterine Fundus	11. Cerebellum
2. Cervix	12. Cisterna Magnum

- | | |
|-------------------------------|--|
| 3. Placenta | 13. Right & Left Kidneys |
| 4. 4-Quadrant Amniotic Fluid | 14. Complete Spine |
| 5. Biparietal Diameter | 15. Umbilical Cord Insertion |
| 6. Transv. Head Circumference | 16. Face & Lips |
| 7. Coronal Head Circum. | 17. Coronal Trunk (Heart,
Stomach, Bladder) |
| 8. Abdominal Circumference | 18. Hands & Feet |
| 9. Femur Length | 19. Size/Age Report Sheet |
| 10. Humerus Length | |

- IV. Images to be used for the portfolio must be of actual patients scanned in the clinics. The images will be clearly labeled and stored in a film jacket. In order to keep the clinical site's film costs at a reasonable level, please put as many images as possible on one sheet of film.
- V. Students that turn in incomplete portfolios will have points deducted from their clinical grade. In addition, incomplete portfolios will result in a grade of Incomplete for this semester until all required images are turned in.
- VI. Students will be scheduled to attend a variety of clinical sites during the DMS program. This will ensure everyone gets exposure to the various ultrasound protocols needed to build their portfolios.

DMS 4800: Clinical Practicum 4 (8 Credit Hours)

1.0 GENERAL INFORMATION

1.1 Catalog Description

Advanced practice supervised clinical experience emphasizing vascular and echocardiographic sonographic examination procedures.

1.2 Course Rationale

A sonographer must develop finely tuned psychomotor and affective learning skills in practical cardiac and vascular scanning in a clinical setting in order to develop competency in this dynamic imaging modality. Clinical assignments are structured to give the student a broad variety of cardiac and vascular observations and scanning experiences under the supervision of practicing sonographers and physicians. The student is expected to participate in all aspects of the cardiac and vascular examinations as delineated by the clinical site's protocol. The sonographer must be able to prepare the patient for the examination, obtain the patient's medical history, select the appropriate equipment, modify the established examination protocols to fit the patient's unique requirements, record diagnostic images, record spectral Doppler waveforms, perform measurements and calculations, discuss the case with the supervising physician, and understand the medical records filing system of the clinic. During this course, the student is expected to perform complete examinations in either the vascular or echocardiographic track.

1.3 General Course Objectives

Upon completion of this course, the student will be able to:

- A. Perform all of the objectives listed in Clinical Practicum 3.

Vascular Students

- B. Interpret sonographic images of normal anatomy, normal anatomical variants, common pathological variants, and diseases as they relate to the vascular system.
- C. Apply the properties of acoustic physics and hemodynamics in the interpretation of the diagnostic images and in the control of the sonographic equipment during vascular examinations.

- D. Demonstrate the use of plethysmography, sonography, and segmental pressure measurements in the diagnosis of vascular disease.
- E. Analyze sonographic & color flow images, spectral Doppler waveforms, segmental pressures, and plethysmographic information in order to aid the interpreting physician in forming an accurate diagnosis.
- F. Show clinical competency by successfully completing the seven vascular sonography competency evaluations.

Echocardiography Students

- A. Interpret sonographic images of normal anatomy, normal anatomical variants, common pathological variants, and diseases as they relate to the cardiac system.
- B. Demonstrate the use of the various imaging windows and imaging planes in the evaluation of normal and abnormal cardiac anatomy and physiology.
- C. Perform standard m-mode and 2D measurements.
- D. Acquire appropriate information utilizing Pulsed Wave (PW), Continuous Wave (CW) and Two-Dimensional (2D) modalities, such as valve area, pressure gradients, volumes, diastolic dysfunction, etc.
- E. Acquire blood pressure readings during resting, exercise, and recovery stages.
- F. Understand the operation of an EKG machine and interpret the basic results of an ECG tracing.
- G. Show clinical competency by successfully completing the echocardiography competency evaluation.

2.0 INSTRUCTIONAL METHODOLOGY

2.1 General Techniques

The following general teaching techniques will be using during this course:

- A. Demonstration and observation
- B. Discussion
- C. Practice
- D. Assigned readings from professional journals and textbooks may be required.

2.2 Resource-Based Techniques

Active observation, participation, and scanning using standard sonographic equipment in the assigned clinic.

3.0 INSTRUCTIONAL MATERIALS/SUPPLIES

3.1 References – Print Materials

The following print materials relate to this course. Note that the item marked by an asterisk (*) is required for use during this course.

- A. *Introduction to Vascular Sonography. (5th ED) (2005). Zwiebel, WJ. W.B. Saunders Company: Philadelphia; ISBN: 0-7216-0631-8.
- B. *Harry, M; Cardiac Doppler Interactive Tutorial CD, Harry
- C. *Reynolds, T; Cardiovascular Principles, Arizona Heart Institute, 1997
- D. Reynolds, T; The Echocardiographer's Pocket Reference, Arizona Heart Institute, 2000
- E. Kaddoura S; Echo Made Easy, Churchill Livingstone, 2002.

4.0 GENERAL EVALUATION PROCEDURES

4.1 Student Evaluation Procedures

- A. Students will be evaluated at the end of each rotation by a Clinical Instructor at the clinic to which the student is assigned. All evaluations will be averaged for the Clinical Evaluation grade.
- B. A written final examination covering the Society of Diagnostic Medical Sonographers (SDMS) Ultrasound Examination Guidelines for the performance of vascular or cardiac examinations, daily sonographic laboratory start-up, operation, and shutdown, and patient care will be administered at the end of the last clinical rotation. There will be a specific test for the vascular track as well as for the cardiac track.
- C. Film critique will be part of the final examination. This evaluates the student's ability to recognize normal cardiac and vascular anatomy and pathology.
- D. Students will maintain accurate records of each case that they observe or participate in. **The student is expected to participate in a minimum of 250 cases during the Spring semester.** The Case Number grades will be based on the following scale:

< 175 cases	=	0 points
175 – 224 cases	=	30 points
225 – 249 cases	=	65 points

250 – 275 cases	=	75 points
276 – 300 cases	=	84 points
301 – 325 cases	=	93 points
> 325 cases	=	100 points

E. The letter grade for this course will be calculated as follows:

Clinical Evaluation	30%
Case Numbers	30%
Final Exam/Film Critique	40%
	100%

F. The scale for determining letter grades in this course is as follows:

A	100 – 93%
B	92 – 84%
C	83 – 75%
F	74 – 0%

4.2 Clinical Evaluation Procedures

Students will evaluate the Clinical sites by using the Clinical Rotation Evaluation form.

4.3 Performance: Lab and Clinic

The student's performance will be evaluated at the end of each clinical rotation by the Clinical Instructor(s) using the CLINICAL INSTRUCTOR'S EVALUATION OF THE STUDENT form. These evaluations will cover the objectives for this course, to include: equipment start-up and shutdown, transducer selection, routine cleaning and care of equipment, patient care, medical history, medical records, cardiac and vascular examination protocols, and student interactions with the patients and clinical staff. Each clinic will have varying equipment, examination protocols, medical records procedures, and other unique conventions, which the student will be expected to master during a given rotation.

During the semester, the student will be expected to perform the following examinations according to the Society of Diagnostic Medical Sonographers (SDMS) Ultrasound Examination Guidelines. Independent performance will be verified by the respective clinical instructors and documented on the Student Competency Evaluation forms.

A. Vascular Track

1. Lower extremity venous Doppler
2. Lower extremity arterial Doppler
3. Upper extremity venous Doppler
4. Upper extremity arterial Doppler
5. Carotid Doppler
6. Segmental Pressures with ABI calculation
7. Plethysmographic procedures (PPG, VPG, SPG)

B. Cardiac Track

1. Parasternal Long Axis View
2. Parasternal Short Axis View
3. Apical View
4. Subcostal View
5. Suprasternal View

4.4 Make up a Clinical Hours

- A. The student may request to arrange a make up of clinical hours after the student's return to the department.
- B. Outline of steps to be taken regarding the make up of clinical hours:
 - I. Notify the Clinical Instructor and the Program Director that you will be unable to be in clinic on the scheduled day.
 - II. Contact the Clinical Instructor to schedule the make up hours.
 - III. Agree on a time for the make up clinical hours.
 - IV. Attend the make-up clinic as agreed.
 - V. Students who schedule a make up day and then miss that day will have to make up two days.

5.0 GENERAL PROCEDURES

- A. Students are expected to participate in the clinic under the supervision of the Clinical Instructor(s).
- B. The student may request a student/instructor conference concerning any clinical rotation, etc. by contacting the Diagnostic Medical Sonography Program Director and requesting an appointment. These conferences should be scheduled for your benefit since the Clinical Instructors are here to help.
- C. Any contested clinical evaluation must be resolved within two weeks after the return of the graded item to the student. After this time, all grades are final.

6.0 CLINIC ATTENDANCE/CONDUCT/DRESS POLICY

6.1 General Remarks

Students should attend every clinical session. **Students who miss more than 16 clinical hours will be required to make up the missed hours.** Failure to make up the missed clinical time will result in a grade of Incomplete (I) for the semester. If unable to attend a clinical session, common courtesy dictates that the Clinical Site Instructor and Diagnostic Medical Sonography Program Director receive prior notification of the impending absence. **If a student is not present in clinic at the appropriate times and does not notify both the Clinical Site and the DMS Program office PRIOR TO the program faculty's discovery of the absence, an automatic five (5) points will be deducted from the final Clinical Practicum grade for each occurrence.** Please refer to the Student Handbook for specifics concerning student absences.

6.2 Clinical Absences and Tardiness Grading Effects

Dependability and promptness are essential to effective clinical education; therefore, excess tardiness and absences will affect your clinical evaluations and your clinical grade. Excessive clinical absences will also lower the number of cases a student observes. The student should be aware that Clinical Affiliates are also potential employers of graduates. Work habits will be closely observed while students are in the clinical environment.

6.3 Conduct/Dress

Student conduct and dress should reflect an awareness of the student's role as an aspiring health care professional and as a representative of the Diagnostic Medical Sonography Program.

7.0 DUE DATES/DEADLINES

All clinical paperwork will be due the last day of the clinical rotation.

Clinical Final Examinations Week: TBA

DMS 4843: Clinical Part IV

8.0 GENERAL INFORMATION

8.1 Course Rationale

A sonographer must develop psychomotor and affective learning experiences in practical sonographic scanning in a clinical setting in order to demonstrate competency in this diagnostic modality. Clinical assignments are structured to give the student a broad variety of sonographic observations and scanning experiences under the supervision of practicing sonographers and physicians. The student will be expected to participate in all aspects of the sonographic examinations as delineated by the clinical site protocol. The sonographer must be able to prepare the patient for the examination, obtain the medical history, select appropriate equipment, follow established examination protocols, revise established protocols to fit unique patient needs, record diagnostic images, discuss the case with the supervising physician, and understand the medical record filing system of the clinic. During this course, the student is expected to perform complete examinations in the following areas: gall bladder, liver, kidneys, aorta & inferior vena cava, pancreas, spleen, pelvis (Transabdominal & Transvaginal), obstetrics, and superficial structures (thyroid, breast, scrotum).

8.2 General Course Objectives

Upon completion of this course, the student will:

- I. Demonstrate knowledge and understanding of related imaging, laboratory, and testing procedures as they contribute to the clinical evaluation of anatomy and pathology to include: patient medical history and physical examination, differential diagnosis, diagnostic protocols, basic principles and procedures of pertinent protocols, and the role of sonography in patient management.
- II. Employ effective oral and written communications skills utilizing appropriate medical terminology.
- III. Apply an understanding of acoustic physics in the analysis of sonographic image artifacts as they relate to the sonographic equipment, patient care, and pathology..

- IV. Demonstrate comprehensive understanding of ultrasound instrumentation, instrument options, operator controls, principles of instrument control, and modes of operation.
- V. Employ patient-centered techniques in patient transportation, standards of patient care personal health, patient psychological support, patient rights, and patient comfort.
- VI. Demonstrate an acceptable level of professional judgment, discretion, professional interaction skills, and ethical performance of duties.
- VII. Exhibit an understanding of medicolegal principles associated with patient care.
- VIII. Be able to perform complete sonographic examinations of the following organs: liver, gallbladder, left & right kidneys, non-gravid uterus, pancreas, spleen, abdominal aorta, inferior vena cava, ovaries, placenta, amniotic fluid, umbilical cord, and fetal anatomy (fetal head, spine, abdomen, heart, femur, humerus with measurements).
- IX. Be able to locate and measure the fetal parameters required to date a pregnancy and to use these parameters to accurately calculate the estimated fetal age and weight.

9.0 INSTRUCTIONAL METHODOLOGY

9.1 General Techniques

The following general teaching techniques will be used during this course:

- A. demonstration and observation
- B. discussion
- C. practice
- D. assigned readings from professional journals and textbooks may be required
- E. internet-based instruction utilizing WebCT, CD ROM, and compressed video

9.2 Resource-Based Techniques

Active participation, observation, and scanning using standard sonographic equipment in the assigned clinic. Film portfolios will be developed by the student to document their progress and to provide images for self-study.

10.0 INSTRUCTIONAL MATERIALS/SUPPLIES

10.1 References – Print Materials

The following print materials relate to this course.

- A. DIAGNOSTIC MEDICAL SONOGRAPHY: A Guide to Clinical Practice: Volume 1: Obstetrics and Gynecology (1997), M.C. Berman, Editor; J. B. Lippincott Company, Philadelphia; ISBN: 0-397-55261-0.
- B. DIAGNOSTIC MEDICAL SONOGRAPHY: A Guide to Clinical Practice; Volume 2: Abdomen & Superficial Structures (1997) D.M. Kawamura, Editor; J. B. Lippincott Company, Philadelphia; ISBN: 0-397-55263-7.
- C. ULTRASONOGRAPHY: AN INTRODUCTION to NORMAL STRUCTURE and FUNCTIONAL ANATOMY. (1995). Curry, RA and Tempkin, BB. W.B. Saunders: Philadelphia; ISBN: 0-7216-4585-2.
- D. FETAL SONOGRAPHY. DuBose, T.J., W.B. Saunders Co., Philadelphia; ISBN: 0-7216-5432-0.
- E. INTRODUCTION to ULTRASONOGRAPHY and PATIENT CARE (1993). Craig M.; W.B. Saunders Co.; ISBN: 0-7216-4229-2.

11.0 GENERAL EVALUATION PROCEDURES

11.1 Student Evaluation Procedures

- A. Students will be evaluated by a Clinical Instructor at the clinic(s) to which the student is assigned. All evaluations will be averaged for the Clinical grade of records at the end of each semester.
- B. Student image portfolios will include the student-generated images listed below. These images must demonstrate appropriate planes of view, content, and quality as described in the Society of Diagnostic Medical Sonographers (SDMS) Ultrasound Examination Guidelines in order to receive points. Additional images as recommended by the Clinical Instructor(s) should also be included. The portfolio will be turned in for evaluation at the end of the semester.

Portfolio Images including transverse, longitudinal and coronal as appropriate: Uterus & ovaries, 1st trimester pregnancy (gestational sac, yolk sac, crown-rump length, embryonic heart rate, cervix, myometrium & and adnexa), 2nd & 3rd trimester (cervix, fundus,

placenta, AFI, fetal head {BPD, transverse & coronal head circumference, cerebellum & cisterna magnum, face or lips}, complete spine, abdominal circumference, umbilical cord insertion, kidneys, coronal trunk including heart, stomach & urinary bladder, femur and humerus length measurements, one hand and foot, and a fetal size/age evaluation sheet.)

- C. A written final examination covering SDMS Guidelines for the performance of abdominal, obstetrical, gynecological, and superficial sonography, and sonographic laboratory daily start-up, operation, and shutdown, patient care, and laboratory examination protocols will administered at the end of the semester.
- D. A record of each case participated in will be maintained by the student. The student is expected to participate in a minimum of 250 cases during the semester. Grades will be assigned by the number of cases as a percentage of the minimum requirements:

<175	=	0 points
175 – 224 cases	=	35 points
225 – 249 cases	=	65 points
250 – 275 cases	=	75 points
276 – 300 cases	=	84 points
301 – 325 cases	=	93 points
> 325 cases	=	100 points

- E. The letter grade for this course will be calculated as follows:

Clinical Grade of Record	30%
Case participation (number)	30%
Portfolio	15%
Final Exam	25%
	100%

- F. The grading scale for determining letter grades in this course is as follows:

A	100 – 93
B	92 – 84
C	83 – 75
F	74 – 0

11.2 Instructor Evaluation Procedures

Students will evaluate the Clinics using the Clinical Rotation Evaluation form.

11.3 Performance: Lab, Clinic, and Project Evaluation

Student performance will be evaluated at the end of each rotation by the Clinical Instructor(s) using the CLINICAL INSTRUCTOR'S EVALUATION OF THE STUDENT form. These evaluations will cover the objectives of this course, including: equipment start-up and shut-down, transducer selection, routine cleaning and care of equipment, patient care, taking the medical history, medical records, sonographic examination protocols, and student interactions with the patients and clinical staff. Each clinic will have varying equipment, exam protocols, medical record procedures, and other unique conventions, which the student will be expected to master during a given rotation.

In the final semester, Senior DMS students will be expected to competently perform the following examinations according to the Society of Diagnostic Medical Sonographers Ultrasound Examination Guidelines. Independent performance will be verified by the respective clinical instructors.

1. Hepatic	7. Pelvic (non-pregnant)
2. Gallbladder	8. Obstetrical – With Fetal Assessment
3. Pancreatic	9. Scrotal
4. Renal	10. Thyroid
5. Spleen	11. Breast
6. Aorta & Inferior Vena Cava	12. Endovaginal – Uterus & Ovaries

11.4 Make up of Clinical Hours

- A. The student may request to arrange a make up of clinical hours after the student's return to the department.
- B. Outline of steps to be taken regarding the make up of clinical hours:
 - 1. notify the Clinical Instructor that you will be unable to be in clinic on the scheduled day
 - 2. contact the Clinical Instructor to schedule the make up hours
 - 3. agree on a time for the make up clinical hours
 - 4. attend the make-u clinic as agreed
 - 5. failure to attend a scheduled make-up day will result in a clinical absence for that day

12.0 GENERAL PROCEDURES

- A. Students are expected to participate in the clinic under the supervision of the Clinical Instructor(s).
- B. The student may request a student/instructor conference concerning any clinical rotation, by contacting the Diagnostic Medical Sonography Program Director and requesting an appointment. These conferences should be scheduled for your benefit since the Clinical Instructors are here to help.
- C. Any contested clinical evaluation must be resolved within two weeks after the return of the graded item to the student. After this time, all grades are final.

13.0 CLINIC ATTENDANCE/CONDUCT/DRESS POLICY

13.1 General Remarks

Students should attend every clinical session. Students who miss more than 16 clinical hours will be expected to make up missed work. If unable to attend a clinical session, common courtesy and the course grading structure dictates that the Clinical Instructor and Diagnostic Medical Sonography Program Director receive prior notification of the anticipated absence. If a student is not present in clinic at the appropriate times, and does not notify both the Clinic and the DMS Program office prior to the program faculty's discovery of the absence, an automatic 5 points will be deducted from the final Clinical grade for ***each occurrence***.

13.2 Clinical Absences and Tardiness Grading Effects

Dependability and promptness are essential to effective clinical work; therefore, tardiness and absences will effect your clinical evaluations and final grade. The student should also remain cognizant that Clinical Affiliates are also potential employers of graduates. Work habits will be observed in the clinical settings.

13.3 Conduct/Dress

Student conduct and dress should reflect an awareness of the student's role as an aspiring health care professional and as a representative of the Diagnostic Medical Sonography Program.

14.0 DUE DATES/DEADLINES

Clinical evaluations will be due the week following the completion of the rotation. Portfolios will be due to the Diagnostic Medical Sonography Program Director the next class day after the end of the clinical rotation. All

Competency Evaluations, clinical Records and Portfolio, and assigned work must be turned in before the Final Examinations are taken.

Program Costs for Certificate/Associate Degree in Sonography

Certificate Program

Tuition, including Registration & Students Fees = \$1875.00 per semester

8 semesters = **\$15,000.00**

Costs Not included in Tuition

Books	Approximately \$1200.00
Insurance	\$50.00 (2x's per year) = \$100.00
Graduation costs	Approximately \$200.00
Uniforms	Approximately \$50.00
National Boards Exam	\$400.00
Professional Dues	\$40.00

Associate Degree

Tuition including Registration & Student Fees = \$2187.50 per semester

8 semesters = **\$17,500.00**

Costs Not included in Tuition

Books	Approximately \$1,600.00
Insurance	\$50.00 (2x's per year) = \$100.00
Graduation costs	Approximately \$200.00
Uniforms	Approximately \$50.00
National Boards Exam	\$400.00
Professional Dues	\$40.00

REQUIRED COURSE REQUISITES

The required course requisites **must** be taken during the first semester in the program. If you have not already taken these courses at another school, Norcross Institute of Allied Health offers these courses.

The **required** course requisite of human anatomy and physiology is **chemistry**.

The required course requisites of Ultrasound Physics I is **Math & Physics (College Algebra & Introduction to Physics)**.

PRE-REQUISITES FOR
THE ASSOCIATE DEGREE
PROGRAM IN SONOGRAPHY

- ❑ MAT 191 – COLLEGE ALGEBRA
- ❑ ENG 101 – ENGLISH
- ❑ PHY 101 – PHYSICS I
- ❑ PHY 102 – PHYSICS II
- ❑ BIO 193 – HUMAN ANATOMY & PHYSIOLOGY I
- ❑ BIO 194 – HUMAN ANATOMY & PHYSIOLOGY II
- ❑ CHM 101 - CHEMISTRY
- ❑ AHS 104 – INTRO TO HEALTHCARE
- ❑ AHS 109 – MEDICAL TERMINOLOGY
- ❑ PSY 191 – PSYCHOLOGY

Transferred Courses (Credit)

PRE-REQUISITES FOR **THE ASSOCIATE DEGREE/CERTIFICATE** **PROGRAM IN SONOGRAPHY**

- ❑ MAT 191 – COLLEGE ALGEBRA
- ❑ ENG 101 – ENGLISH
- ❑ PHY 101 – PHYSICS I
- ❑ PHY 102 – PHYSICS II
- ❑ BIO 193 – HUMAN ANATOMY & PHYSIOLOGY I
- ❑ BIO 194 – HUMAN ANATOMY & PHYSIOLOGY II
- ❑ CHM 101 - CHEMISTRY
- ❑ AHS 104 – INTRO TO HEALTHCARE
- ❑ AHS 105 – MEDICAL ETHICS
- ❑ AHS 109 – MEDICAL TERMINOLOGY
- ❑ PSY 191 – PSYCHOLOGY
- ❑ BIO 185 – MICROBIOLOGY
- ❑ PATH 501 – GENERAL PATHOLOGY
- ❑ PATH 502 – ABDOMEN/OB PATHOLOGY
- ❑ PATH 503 – ECHO/VASCULAR PATHOLOGY

PRE-REQUISITES FOR THE CERTIFICATE PROGRAM IN SONOGRAPHY

- ❑ MAT 103 – COLLEGE ALGEBRA
- ❑ ENG 101 – ENGLISH
- ❑ PHY 101 – PHYSICS I
- ❑ PHY 102 – PHYSICS II
- ❑ BIO 193 – HUMAN ANATOMY & PHYSIOLOGY I
- ❑ BIO 194 – HUMAN ANATOMY & PHYSIOLOGY II
- ❑ PAT 101 – PATHOLOGY I
- ❑ PAT 102 – PATHOLOGY II
- ❑ CHM 101 - CHEMISTRY
- ❑ AHS 104 – INTRO TO HEALTH CARE
- ❑ AHS 109 – MEDICAL TERMINOLOGY
- ❑ BIO 185 – MICROBIOLOGY
- ❑ PSY 101 – BASIC PSYCHOLOGY

Requirements for Graduation Echocardiography DMS Certificate

		Credits
MAT 103	College Algebra	3
ENG 101	English	3
AHS 101	Anatomy & Physiology I	3
AHS 102	Anatomy & Physiology II	3
CHM 101	Chemistry	3
BIO 196	Medical Microbiology	3
BIO 197	Medical Pathology I	3
BIO 198	Medical Pathology II	3
AHS 104	Intro to Health Care	3
AHS 109	Medical Terminology	3
DMS 101	Intro to Sonography & Patient Care	3
DMS 102	Sonographic Physics I	3
ECH 110	Echocardiography I	1
ECH 120	Clinical Echo I	3
DMS 125	Sonographic Physics II	3
ECH 115	Echocardiography II	1
ECH 130	Clinical Echo II	1
ECH 140	Clinical Echo III	1
ECH 145	Intro to Vascular	1
ECH 155	Case Study & Journal Review	3
ECH 200	Clinical Echo IV	1
ECH 205	Comprehensive Registry Review	1

Requirements for Graduation Echocardiography DMS Associate Degree

		Credits
MAT 191	College Algebra	3
ENG 101	English	3
BIO 193	Human Anatomy & Physiology I	3
AHS 104	Patient Care, Medical Ethics & Law	3
AHS 109	Medical Terminology	3
CHM 101	Chemistry	3
BIO 194	Human Anatomy & Physiology II	3
BIO 196	Medical Microbiology	3
BIO 197	Medical Pathology I	3
BIO 198	Medical Pathology II	3
PSY 191	Psychology	3
DMS 102	Sonographic Physics I	3
ECH 110	Echocardiography I	1
ECH 120	Clinical Echo I	1
DMS 125	Sonographic Physics II	3
ECH 115	Echocardiography II	1
ECH 130	Clinical Echo II	1
ECH 140	Clinical Echo III	1
ECH 145	Intro to Vascular	1
ECH 150	Intro to Pediatric Echo	1
ECH 155	Case Study & Journal Review	3
ECH 200	Clinical Echo IV	1
ECH 205	Comprehensive Registry Review	1

Requirements for Graduation Vascular DMS Associate Degree

		Credits
MAT 191	College Algebra	3
BIO 193	Human Anatomy & Physiology I	3
AHS 104	Patient Care Medical Ethics & Law	3
AHS109	Medical Terminology	3
BIO 194	Human Anatomy & Physiology II	3
CHM 101	Chemistry	3
BIO 197	Medical Pathology I	3
BIO 198	Medical Pathology II	3
BIO 196	Medical Microbiology	3
PSY 191	Psychology	3
DMS 102	Sonographic Physics I	3
VAS 115	Extremity Arterial Vascular Procedures	1
VAS 105	Extremity Venous Vascular Procedure	1
DMS 103	Sonographic Physics II	3
VAS 110	Clinical Vascular I	1
VAS 130	Cerebrovascular Procedures	1
VAS 120	Vascular Quantitative & Test Measures	1
VAS125	Clinical Vascular II	1
VAS 100	Abdominal & Visceral Vascular Procedures	1
VAS 135	Case Study & Journal Review	3
VAS 140	Therapeutic intervention & Diagnostic Procedures for Vascular Disease	1
VAS 145	Clinical Vascular III	1
VAS 200	Comprehensive Registry Review	1
VAS 205	Clinical Vascular IV	1

Requirements for Graduation

Vascular DMS Certificate

		Credits
MAT 103	College Algebra	3
ENG 101	English	3
PSY 101	Psychology	3
AHS 101	Anatomy & Physiology I	3
AHS 102	Anatomy & Physiology II	3
CHM 101	Chemistry	3
BIO 196	Medical Microbiology	3
BIO 197	Medical Pathology I	3
BIO 198	Medical Pathology II	3
AHS 104	Introduction to Healthcare	3
DMS 102	Sonographic Physics 1	3
VAS 115	Extremity Arterial Vascular Procedures	1
VAS 105	Extremity Venous Vascular Procedure	1
VAS 103	Sonographic Physics 2	3
VAS 110	Clinical Vascular 1	1
VAS 130	Cerebrovascular Procedures	1
VAS 120	Vascular Quantitative & Test Measures	1
VAS 125	Clinical Vascular 2	1
VAS 100	Abd. & Visceral Vascular Procedures	1
VAS 135	Case Study & Journal Review	3
VAS 140	Therapeutic Intervention & Diagnostic Procedures for Vascular Disease	1
VAS 145	Clinical Vascular III	1

Requirements for Graduation General Sonography Degree (DMS)

		Credits
DMS 131	Foundations of Sonography	3
DMS 132	Sonographic Appearance of Normal Anatomy	3
DMS 133	Cross Sectional Anatomy	3
DMS 134	Pelvic Sonography & Pathology	3
DMS 135	Abdominal Sonography & Pathology	3
DMS 136	Sonographic Physics I	3
DMS 137	Clinical Sonography I	1
DMS 201	Normal Obstetric Sonography	3
DMS 202	Sonographic Physics II	3
DMS 203	High Resolution Imaging	3
DMS 204	Clinical Sonography II	1
DMS 200	Interventional Sonography	1
DMS 206	Pediatric Sonography	3
DMS 207	Abnormal Obstetric Sonography	3
DMS 209	Clinical Sonography III	1
DMS 205	Introduction to Vascular Sonography	3
DMS 210	Comprehensive OB/GYN Registry Review	1
DMS 212	Comprehensive Abdomen Registry Review	1
DMS 213	Comprehensive OB/GYN Registry Review	1
DMS 214	Clinical Sonography IV	1

Requirements for Graduation
DMS Program
Specialty: Echocardiography

Section 1 DMS 101

- Basic scanning
- Infection control & body mechanics
- Vital signs
- Tube care

Section 2 ECH 110, ECH 120

- Patient history and preparation
- Basic views
- Equipment settings
- Doppler, CW and color
- Measurements
- Report preparation

Section 3 ECH 115, ECH 130

- Off Axis views
- Transesophageal Echo
- Stress Echo
- Cardiomyopathies

Section 4 ECH 140, ECH 145

- Carotid Artery & misc vascular
- Pediatric Echo
- Prosthetic devices

DMS Program

Specialty: Vascular Technology

Section 1 DMS 101 & DMS 102

Basic operation of ultrasound scanners

Patient Care

Cross Sectional Anatomy

Basic Scanning Protocols

Transducer Selection

Section 2 VAS 100, VAS 120, DMS 103

Extremity Arterial

Extremity Venous

Section 3 VAS 120, VAS 130

Cerebrovascular Procedures

Vascular Quantitative & Test Measurement

Section 4 VAS 115, VAS 140

Abdominal & Visceral Procedures

Therapeutic & Interventional

Cancellation and Refund Policy

Due to limited class size, a strict refund policy is in effect at Norcross Institute of Allied Health.

1. A student may terminate from a program by submitting written notification of withdrawal to NIAH. The official withdrawal date will be the date that a written notification is received. All refunds will be calculated based on the official withdrawal date and total tuition paid at time of withdrawal. Refunds will be made within 30 days from receipt of written notification.
2. Application fees, cost of lab coat, equipment and ID badge are non-refundable.
3. Students who submit written notification of cancellation within 5 days after signing a student contract and prior to first day of class will be refunded 100% of all monies paid, except non-refundable fees.
4. For a student requesting cancellations 3 business days after signing the contract or completing no more than 5% of instructional time, no less than 95% of tuition shall be refunded.
5. For a student completing more than 5% but no more than 10% of instructional time, no less than 90% of tuition shall be refunded.
6. For a student completing more than 10% but no more than 25% of instructional time, no less than 75% of tuition shall be refunded.
7. For a student completing more than 25% but no more than 50% of instructional time, no less than 50% of tuition shall be refunded.
8. For a student completing more than 50% of instructional time, the school will not give a refund.
9. Any student who is dismissed for breach of any part of the enrollment agreement or student guidelines will be refunded by the same calculations above.
10. In the event the NIAH has to cancel a class or make any changes to a scheduled program resulting in a student not being able to complete a program, all monies paid by the student for tuition will be refunded.

My signature acknowledges that I have read this document and/or have asked and received clarification on the content and understand the cancellation and refund policy as outlined above.

Student Signature

Date

School Policies and Procedures

HONOR CODE

Standards of Academic Honesty and Honor

In accordance with policies and procedures regarding Academic Honesty, cheating and plagiarism are unacceptable in attempting to fulfill academic assignments and exams.

The institute has established this policy to ensure due process in such cases. State and federal laws involving computer fraud, software piracy, etc., as well as institution policy, govern the use of the school's computer systems. Special regulations are set to relate to Internet usage other than in support of research and educational objectives.

If you are in violation of dishonesty, cheating or plagiarism you will be suspended from Norcross Institute of Allied Health immediately. **There will be no refund of paid tuition, no exceptions.** Please sign below stating that you understand this agreement.

Student Name (printed)

Student Signature

Date

Program Director

Date

Administrative Director

Date

A copy of this form will be placed in the student file.

School Policies and Procedures

Waiver Statement for Pregnant Women

I, _____, do give
the permission or consent to be scanned/performed ultrasound examination.

Print Client Name

Program Director

Client Signature

School Administrator

Client State ID and/or Driver's License No.

Date: _____

School Policies and Procedures

School Uniform and ID

It is mandatory that you wear your school uniform and ID badge whenever you are coming to attend class. You must have the uniform and badge on prior to entering the facility.

The first school id is free. However, there is a \$5 charge for replacement id cards.

School Policies and Procedures

Dropped Classes and Tuition Payments

If a student misses 2 or more classes or drops a class(s) within the first two weeks of the semester, there will be a \$50 charge. Otherwise, monthly payments will continue during that semester.

School Policies and Procedures

Cell Phone Policy

NIAH prohibits student use of cell phones, pagers, or similar communication devices in classrooms and laboratory areas. Exceptions to this policy, due to special circumstances, shall be at the discretion of the instructor and/or program director.

Violations of the Cell Phone Use Policy in any of the areas listed above may lead to formal charges of academic dishonesty, class disruption or other charges as documented in the Student Handbook.

School Policies and Procedures

No Children Allowed in Facility

No children allowed in facility due to insurance liability.

School Policies and Procedures

A student must complete each course and take their final exam prior to taking the next course in the Diagnostic Medical Sonography program. For example, you must complete all of your Physics, Anatomy & Physiology, and Pathology courses before taking any Echo or Abdomen classes.

No student will be assigned a clinical site if all coursework and exams have not been completed.

If a student is currently enrolled in a class and has not completed what is mentioned above, they will be withdrawn from the class.

NO EXCEPTIONS.