



# **Cleveland Clinic**

## **Mercy Hospital**

A Catholic hospital sponsored by  
The Sisters of Charity of St. Augustine

School of Diagnostic Medical Sonography  
Course Catalog

## School of Diagnostic Medical Sonography

### Course Schedule

Our program provides a broad base of education and performance- based clinical experience in all technical aspects of work as a sonographer. Training and experience are provided in the following areas of sonography: Abdomen, OB/Gyn, and Superficial Structures. The graduate is eligible to apply for the Abdomen and OB/GYN registry examinations of the American Registry of Diagnostic Medical Sonographers (ARDMS).

<b><u>FIRST QUARTER-</u></b>	<b><u>Contact Hours</u></b>	<b><u>Credit Hours</u></b>
July —October		
Introduction to Ultrasound	22	1.5
Abdomen	58	4.5
Sectional Anatomy	57.5	4.5
Lab	32	-
Clinical I	310.5	4.0
<b><u>SECOND QUARTER-</u></b>		
October- December		
Gyn/OB 1	28.5	2.0
Obstetric 2/3	72.5	6.0
Lab	24	-
Clinical II	355	4.5
<b><u>THIRD QUARTER-</u></b>		
January- March		
Superficial Structures	37	3.0
Ultrasound Physics	75	6.0
Lab	12	-
Registry Review (physics portion)	26	4 <sup>th</sup> quarter grade
Clinical III	330	4.0
<b><u>FOURTH QUARTER-</u></b>		
April - June		
Pediatric and Miscellaneous	50.5	4.0
Registry Review (Abd & OB/Gyn)	72 (+physics review)	6.0
Lab	10	-
Clinical IV	347.5	4.5
<b>TOTAL</b>	<b>1920</b>	<b>54.5</b>

*Course schedule may be subject to change.*

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Course Description

Introduction to Ultrasound

This class is an introduction to the theory and practice of ultrasound in the current health care system. It details the basic concepts of the physics of ultrasound and anatomical, directional and descriptive terms, with emphasis on ultrasound terminology. The students will also learn the standards of scanning and correct ergonomics. The students will be introduced to professional sonography societies and encouraged to join. The students will be given lectures that cover medical law, code of ethics, professionalism, and patient care specific to sonography. The student will also learn about the importance of cultural competency.

Abdomen

This class details the anatomy, physiology and pathology of the following organs: liver, gallbladder/biliary system, pancreas, genitourinary system, spleen, adrenals, and retroperitoneum. Detailed instruction is given in the basic methods of routine abdominal examinations. The students will learn the sonographic appearance of the abdominal organs in both normal and pathological situations. Basic Doppler flow characteristic are also discussed with more emphasis on Doppler in the 4<sup>th</sup> quarter.

Sectional Anatomy

This course will teach students to recognize anatomy in sectional planes, including transverse, sagittal and coronal planes. The students will be instructed in sectional anatomy in the following areas: head, neck, thorax, abdomen, and pelvis. Pictorial slabs as well as drawings, CT, MRI, PET and ultrasound images will be used to enhance the students' learning experience.

Gynecology/OB 1

This class details anatomy, physiology and pathology of the female reproductive organs, pelvic musculature and pelvic ligaments. Detailed instruction is given in basic methods of routine pelvic examinations including transvaginal exams. The student will be able to identify the sonographic appearance and Doppler characteristics of the pelvic organs in both normal and abnormal conditions. This course also details the anatomy, embryology, physiology and pathology of the first trimester pregnancy. The student will receive detailed instruction in basic methods of first trimester obstetric examinations, including transvaginal exams. The students will be able to recognize the ultrasound appearance of first trimester pregnancy and female pelvis in both normal and abnormal situations.

Obstetric 2/3- taught after GYN/OB1

In this class the students will be instructed in detail the anatomy, physiology, pathology and anomalies of the 2<sup>nd</sup> and 3<sup>rd</sup> trimester pregnancy. The students will be instructed in the appropriate methods for obtaining fetal measurements and detailed fetal anatomy, as well as in assessing maternal structures, the placenta and Doppler evaluation during

pregnancy. The students will be taught to recognize both normal and abnormal conditions associated with pregnancy.

#### Superficial Structures (ABD)

This class details the anatomy, physiology and pathology of the thyroid gland, scrotum, breast and prostate gland. The student will be able to identify the sonographic appearance and Doppler characteristics of these structures in normal and pathological conditions. The student will receive detailed instruction in basic methods of small parts examinations.

#### Ultrasound Physics

The goal of this class is to teach the students the principles and instrumentation of ultrasound. The students will learn to recognize and correct artifacts. The students will be instructed in the physics of ultrasound, instrumentation, Doppler, hemodynamics, safety issues, biological effects, emerging technologies and quality assurance and performance.

#### Pediatrics and Miscellaneous

This class will help the students to recognize the sonographic appearance of normal and pathological conditions of the abdomen, pelvis, hips, spine, neonatal brain, musculoskeletal structures and GI tract. This class will discuss normal anatomy and pathology of the following organs/areas: Knee (popliteal space), GI tract, appendix, abdominal wall, non-cardiac chest, MSK system and miscellaneous lesions. The student will learn to recognize the normal and abnormal sonographic appearance of these structures/areas and they will be instructed in the basic scanning methods of them as well. In addition, the student will continue to build on the knowledge of vessel, anatomy, physiology and pathology discussed in Abdomen. The students will receive instruction on the theory and use of Doppler, color Doppler and power Doppler during an abdominal Doppler evaluation. The following areas will be covered: aorta (and branches), IVC, the portal venous system, TIPS, organ transplants, renals and renal arteries and veins. The students will be able to recognize normal and abnormal sonographic appearances of abdominal vasculature. An introduction to vascular, including peripheral arteries, veins and Doppler evaluation will be included in this course.

#### Registry Review

This class serves as a review in preparation for the ARDMS examinations. Students will be given review exercises in the areas of Abdomen, OB/Gyn and Physics. The student will take "mock registries" with at least a 75% average in order to pass the class.

#### Clinical I (emphasis ABD)

The first quarter of clinical training the student will concentrate mostly on abdominal scanning and equipment competencies. The majority of competencies focus on abdominal scanning including liver, gallbladder, aorta, pancreas, renals and spleen. Students will be given detailed instruction in scan techniques and clinical skills in the above areas. The students are also given detailed instruction in the operation of the sonographic equipment and correct ergonomics. All competencies must be completed

successfully completed to pass the clinical portion of the quarter. Basic Doppler evaluation will be taught.

#### Clinical II (emphasis ABD and OB/Gyn)

The second quarter of clinical training concentrates on Abdomen and OB/Gyn scanning. Students will be given detailed instruction in scan techniques and clinical skills in the above areas. Competencies are in the above areas including transvaginal examination and must be successfully completed to pass the clinical portion of the quarter. Doppler evaluation of these organs/areas will be included.

#### Clinical III (emphasis ABD, OB/Gyn and superficial structures)

The third quarter of clinical training concentrates on Abdomen, OB/Gyn and Superficial structure scanning. Students will be given detailed instruction in scanning techniques and clinical skills including Doppler in the above areas. All required competencies must be completed in the above areas to pass the clinical portion of this quarter.

#### Clinical IV

The fourth quarter of clinical training includes competencies in the areas of abdomen, superficial structures, MSK and OB/Gyn (with 3D imaging). More detailed instruction will be given for Doppler evaluation of the portal and hepatic vessels, renal vessels and other abdominal vessels as encountered in the clinical area. ARFI scan technique and needle procedure guidance will also be taught. Students will focus on fine tuning their scanning skills in these areas. All competencies must be successfully completed to pass the clinical portion of this quarter.

## Competency & Lab Assessment(\*) Schedule

Student's Name \_\_\_\_\_

80% or higher is considered passing.

### First Quarter

Date complete	Date complete	Date complete
_____ Aorta _____	_____ Liver _____	_____ Renals _____
_____ Pancreas _____	_____ Gallbladder _____	_____ Sequoia _____

Student's Signature \_\_\_\_\_ Date \_\_\_\_\_

Director's Signature \_\_\_\_\_ Date \_\_\_\_\_

Susan Bielanski, BS, RDMS

### Second Quarter

_____ Aorta _____	_____ Liver _____	_____ Renal _____
_____ Pancreas _____	_____ GB _____	_____ GynPelvis _____
_____ 1 <sup>st</sup> Tri OB _____	_____ TV _____	_____ Fetal Pos _____
_____ Bio _____	_____ Bladder _____	

Student's Signature \_\_\_\_\_ Date \_\_\_\_\_

Director's Signature \_\_\_\_\_ Date \_\_\_\_\_

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### Third Quarter

_____ Abd Complete _____	_____ Abd Complete _____	_____ Abd Lim _____
_____ Thyroid _____	_____ Testicle _____	_____ Breast _____
_____ TV _____	_____ TV _____	_____ Doppler Equip _____
_____ 2 <sup>nd</sup> Tri OB _____	_____ 3 <sup>rd</sup> Tri Fet Pos _____	_____ Bio _____

Student's Signature \_\_\_\_\_ Date \_\_\_\_\_

Director's Signature \_\_\_\_\_ Date \_\_\_\_\_

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### Fourth Quarter

_____ Abd Complete _____	_____ Abd Complete _____	_____ Abd Doppler _____
_____ Thyroid _____	_____ Testicle _____	_____ 3D image _____
_____ TV _____	_____ TV _____	_____ Lesion _____
_____ 2 <sup>nd</sup> Tri OB _____	_____ 3 <sup>rd</sup> Tri Fet Pos _____	_____ Portable _____
_____ Non-cardiac chest _____	_____ Bx/Needle _____	_____ ARFI _____
_____ GI & Appendix* _____	_____ Achilles* _____	_____ Renal Doppler* _____
_____ 3D* _____	_____ Mesenteric Doppler* _____	

Student's Signature \_\_\_\_\_ Date \_\_\_\_\_

Director's Signature \_\_\_\_\_ Date \_\_\_\_\_

Susan Bielanski, BS, RDMS