



University  
of  
Pittsburgh

School  
of  
Medicine

## Ultrasound Basics: Introduction to Correlation with the Physical Examination Mini-Elective Spring 2017

<u>Course Dates:</u>	January 11, February 1, 22, March 8 Wednesdays, 5:00-6:30 PM
<u>Maximum Students:</u>	24 (4 per instructor per session)
<u>Class Year:</u>	MS1
<u>Course Director:</u>	Paul Speer, MD Associate Professor Department of Obstetrics, Gynecology and Reproductive Sciences
<u>Contact Information:</u>	Paul Speer, MD Department of Obstetrics, Gynecology and Reproductive Sciences Division of Ultrasound speerpd@mail.magee.edu 412-641-4506
<u>Registration:</u>	Betsy Nero, Office of Medical Education betsy@medschool.pitt.edu

Description:

During this 4 session mini-elective, which is designed to run during the MS1 Physical Diagnosis course, students will correlate their physical diagnosis skills with ultrasound. This will be a hands-on course that will focus on correlating ultrasound with physical assessment.

Requirements:

Students should bring their stethoscopes  
Active participation in all four sessions

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## **COURSE OUTLINE**

### **Ultrasound Basics: Introduction to Correlation with the Physical Examination**

#### **Course Director:**

Paul Speer MD Associate Professor of Ob/Gyn/RS

#### **Contact Information:**

Paul Speer, MD; [speerpd@mail.magee.edu](mailto:speerpd@mail.magee.edu); 412-641-4506

#### **Location:**

Lecture: Scaife Hall, LR2

Ultrasound Scanning: Scaife Hall, 4<sup>th</sup> floor Small Group Rooms—460A,B&C, 464A&B, 468A&B

#### **Session 1:**

Session 1 is intended to introduce the student to the ultrasound machine, and to learn the basic principles of point-of-care ultrasonography.

##### Session 1 Objectives:

1. Define ultrasound
2. Describe the ALARA principle as it relates to diagnostic imaging.
3. Demonstrate the basic functions of the ultrasound machine.
4. Describe how to select the proper transducer for the intended application.
5. Demonstrate how gain, frequency and depth affect image acquisition
6. Understand and demonstrate transducer orientation with respect to the acquired image.
7. Demonstrate understanding of differences in appearance of tissue on ultrasound and terminology associated with these differences (anechoic, hypoechoic, hyperechoic, isoechoic)
8. Understand and identify common ultrasound artifacts.
9. Demonstrate understanding of the basic principles described above to obtain images of the liver, gallbladder, and kidney,

#### **Session 2:**

Session 2 will focus on the cardiovascular system (heart and major vessels).

##### Session 2 Objectives:

1. Understand the basic anatomy of the heart
2. Obtain views of the heart including subxiphoid, apical 4 chamber, parasternal long axis, and short axis views
3. Identify the pericardium, mitral, tricuspid, aortic and pulmonic valves
4. Demonstrate how to measure the LV posterior wall and aortic outflow tract
5. Develop essential knowledge for performing a transthoracic echocardiogram

#### **Session 3:**

Session 3 examines the abdomen, kidneys, ureters and bladder.

##### Session 3 Objectives:

1. Describe the anatomy of the abdominal aorta and its major branches
2. Obtain views of the liver and gallbladder
3. Obtain views of the pancreas
4. Obtain views of the kidneys
5. Obtain views of the bladder
6. Understand the relation of the bladder to the uterus and/or prostate
7. Measure the bladder size and estimate the bladder volume
8. Attempt to visualize ureteric jets using power Doppler

#### **Session 4:**

Session 4 will involve anatomic structures of the head and neck.

##### Session 4 Objectives:

1. Obtain views of the thyroid
2. Evaluate the carotid sheath
3. Demonstrate the course of the IJV and carotid artery in relation to adjacent structures
4. Demonstrate how changes in IJV diameter occur with valsalva and body inclination
5. Demonstrate the anterior and posterior chambers of the eye.
6. Identify the optic nerve sheath, retina and lens