

**Course Description****SON1145L | Pediatric Sonography | 1.00 credit**

This course is designed to cover aspects of pediatric ultrasound examinations. Topics include Liver, biliary, spleen, renal, adrenal, gastrointestinal, scrotum, and musculoskeletal structures. Subject matter includes etiology, pathophysiology, clinical presentations, sonographic appearance, and differential diagnosis. Prerequisite: SON1141C.

**Course Competencies**

**Competency 1:** The student will demonstrate knowledge of the physiology, pathophysiology, sonographic technique, measurements, sonographic appearances, and Doppler patterns, where applicable, in both normal and abnormal structures in pediatric sonography of the liver by:

1. Identifying normal anatomy of the liver
2. Identifying the sonographic cross-sectional anatomy of the liver
3. Identifying and describing the sonographic appearance of the liver
4. Identifying the scanning protocol of a pediatric liver ultrasound
5. Identifying and describing the sonographic appearance of liver pathology
6. Discussing the pathophysiology of liver pathology
7. Identifying the differential diagnosis of abnormal ultrasound findings of the liver
8. Discussing scanning techniques used in pediatric liver ultrasound
9. Identifying the role of color Doppler and spectral trace Doppler in liver ultrasound

**Competency 2:** The student will demonstrate knowledge of physiology, pathophysiology, sonographic technique, measurements, sonographic appearances, and Doppler patterns, where applicable, in both normal and abnormal structures in pediatric sonography of the gallbladder and biliary system by:

1. Identifying normal anatomy of the gallbladder and biliary system
2. Identifying the sonographic cross-sectional anatomy of the gallbladder and biliary system
3. Identifying and describing the sonographic appearance of the gallbladder and biliary system
4. Identifying the scanning protocol of a pediatric gallbladder and biliary system
5. Identifying and describing the sonographic appearance of the gallbladder and biliary system Pathology
6. Discussing the pathophysiology of gallbladder and biliary system Pathology
7. Identifying the differential diagnosis of abnormal gallbladder and biliary system ultrasound findings
8. Identifying scanning techniques used in pediatric gallbladder and biliary system ultrasound
9. Discussing the role of color Doppler and spectral trace Doppler in pediatric sonography of the gallbladder and biliary system

**Competency 3:** The student will demonstrate knowledge of the physiology, pathophysiology, sonographic technique, measurements, sonographic appearances, and Doppler patterns, where applicable, in both normal and abnormal structures in pediatric sonography of the kidneys by:

1. Identifying normal anatomy of the kidneys
2. Identifying the sonographic cross-sectional anatomy of the kidneys
3. Identifying and describing the sonographic appearance of the kidneys
4. Discussing the scanning protocol of the kidneys
5. Discussing the pathophysiology of renal pathology
6. Identifying the differential diagnosis of abnormal ultrasound findings of the kidneys
7. Discussing scanning techniques used in pediatric renal ultrasound
8. Discussing the role of color Doppler and spectral trace Doppler in renal ultrasound

**Competency 4:** The student will demonstrate knowledge of physiology, pathophysiology, sonographic technique, measurements, sonographic appearances, and Doppler patterns, where applicable, in both standard and abnormal structures in pediatric sonography of the adrenal gland by:

1. Identifying the sonographic cross-sectional anatomy of the spleen

**Competency 5:** The student will demonstrate knowledge of physiology, pathophysiology, sonographic technique, measurements, sonographic appearances, and Doppler patterns, where applicable, in both standard and abnormal structures in pediatric sonography of the spleen by:

1. Identifying normal anatomy of the spleen
2. Identifying and describing the sonographic appearance of the spleen
3. Discuss the scanning protocol of ultrasound imaging of the spleen
4. Discussing the pathophysiology of spleen pathology
5. Identifying the differential diagnosis of abnormal ultrasound findings of the spleen
6. Discussing scanning techniques used in pediatric ultrasound of the spleen
7. Discussing the role of color Doppler and spectral trace Doppler in ultrasound of the spleen

**Competency 6:** The student will demonstrate knowledge of physiology, pathophysiology, sonographic technique , measurements, sonographic appearances, and Doppler patterns, where applicable, in both normal and abnormal structures in pediatric sonography of the male genitourinary system by:

1. Identifying normal anatomy of the male genitourinary system
2. Identifying the sonographic cross-sectional anatomy of the male genitourinary system
3. Identifying and describing the sonographic appearance of the male genitourinary system
4. Discussing the scanning protocol of ultrasound imaging the male genitourinary system
5. Identifying and describing the sonographic appearance of male genitourinary system
6. Discussing the pathophysiology of abnormal findings of the male genitourinary system
7. Identifying the differential diagnosis of abnormal ultrasound findings of male. genitourinary system
8. Discussing scanning techniques used in pediatric ultrasound of the male genitourinary system
9. Discussing the role of color Doppler and spectral trace Doppler in ultrasound of the male genitourinary system
10. Differentiate complete, incomplete, and intermittent testicular torsion

**Competency 7:** The student will demonstrate knowledge of the physiology, pathophysiology, sonographic technique, measurements, sonographic appearances, and Doppler patterns, where applicable, in both normal and abnormal structures in pediatric sonography of the gastrointestinal system by:

1. Describe and identify the sonographic appearance of normal gastrointestinal. structures identified in pediatric ultrasound
2. Describing and identifying the sonographic appearance of hypertrophied pyloric stenosis
3. Describing and identifying the sonographic appearance of appendicitis
4. Describing and identifying the sonographic appearance of intussusception
5. Describing and identifying the sonographic appearance of mesenteric or omental cysts
6. Describe and identify the sonographic appearance of duplication cysts in the bowel
7. Describing and identifying the sonographic appearance of duodenal atresia
8. Describing and identifying the sonographic appearance of meconium peritonitis
9. Discuss the differential diagnosis for pathologies seen in pediatric sonography of the gastrointestinal system
10. Discussing and recognizing the ultrasound protocol of pediatric sonography of the gastrointestinal system
11. Describing scanning techniques and ultrasound machine controls and modalities used in pediatric ultrasound of the gastrointestinal system
12. Identifying the sonographic cross-sectional anatomy of the gastrointestinal system
13. Discussing the pathophysiology of abnormal findings of the gastrointestinal system
14. Identifying the differential diagnosis of abnormal ultrasound findings of gastrointestinal system
15. Discussing scanning techniques used in pediatric ultrasound of the gastrointestinal system
16. Discussing the role color Doppler and spectral trace Doppler in ultrasound of the gastrointestinal system

**Competency 8:** The student will demonstrate knowledge of the physiology, pathophysiology, sonographic technique, measurements, sonographic appearances, and Doppler patterns, where applicable, in both normal and abnormal structures in pediatric sonography of the musculoskeletal by:

1. Identifying normal anatomy of the neonatal hip
2. Identifying the sonographic cross-sectional anatomy of the neonatal hip

3. Identifying and describing the sonographic appearance of the neonatal hip
4. Discussing the scanning protocol of ultrasound imaging of the neonatal hip
5. Discuss the pathophysiology of the abnormal neonatal hip
6. Identifying the differential diagnosis of abnormal ultrasound findings of the neonatal hip
7. Discussing scanning techniques used in pediatric ultrasound of the neonatal hip

**Learning Outcomes:**

- Communicate effectively using listening, speaking, reading, and writing skills
- Solve problems using critical and creative thinking and scientific reasoning
- Formulate strategies to locate, evaluate, and apply information
- Use computer and emerging technologies effectively