Bossier Parish Community College
Master Syllabus

Course Prefix and Number: SONO 202 **Credit hours**: 2

Course Title: Abdominal Sonography I

Course Prerequisites: Enrollment in the DMS program courses is limited to those students who have been selected and admitted to the professional phase of the program. Program courses are sequenced by semester and must be taken as a group each semester per program requirements and policies.

Textbook(s):
Required Textbooks: Abdomen and Superficial Structures: Diane Kawamura 4th Edition
Textbook of Diagnostic Sonography Vol 1: Sandra L. Hagen-Ansert 9th edition

Course Description:

This introduction to abdominal sonography course will provide an in-depth review of abdominal anatomy as well as common imaging pathology for the abdominal wall, peritoneal cavity, liver, gallbladder, pancreas, spleen, and kidneys. Students will learn the basic terminology necessary to complete preliminary reporting worksheets as well as begin to use critical thinking skill while assessing pathology and patient history.

Learning Outcomes:

A. **Identify anatomy, relational anatomy, anatomic variants, and sonographic appearances of normal anatomical structures**.

a) Abdominal wall
b) Adrenal glands
c) Biliary system
d) Gastrointestinal tract
e) Liver
f) Lung/pleura
g) Lymphatic system
h) Pancreas
i) Peritoneal and retroperitoneal cavities
j) Spleen
k) Urinary tract

B. Demonstrate knowledge of the physiology, pathophysiology, sonographic technique, measurements, sonographic appearances, and Doppler patterns, where applicable, in both normal and abnormal structures.

a) Abdominal wall
b) Adrenal glands

c) Biliary system
d) Gastrointestinal tract
e) Great vessels and branches
f) Liver
g) Lymphatic system
h) Pancreas
i) Peritoneal and retroperitoneal cavities
j) Spleen
k) Urinary tract

C. Evaluate scanning protocol and modification(s) based on the sonographic findings and the differential diagnoses.

1) Indications and contraindications
2) History and physical examination
3) Related imaging, laboratory, and functional testing procedures

To achieve the learning outcomes, the student will or will be able to:

- Analyze sonographic images for normal anatomy
- Describe the appropriate patient preparation for a sonographic evaluation
- Calculate sensitivity, specificity, and accuracy using the four outcomes of true positive, false positive, true negative, and/or false negative
- Identify technically satisfactory and unsatisfactory sonographic examinations of the abdomen
- Identify the etiology and sonographic appearance of acute and chronic abdominal pathology
- Recognize the different sonographic appearances of cystic, solid, and complex lesions
- Locate the nine regions of the abdomen and the four quadrants of the abdominopelvic cavity.
- Discuss the extent, the muscles, and the subcutaneous layers of the abdominal wall and diaphragm.
- Describe the role of sonography, the sonographic technique, and the normal sonographic appearance of the abdominal wall and diaphragm.
- Identify the etiology and sonographic appearance of acute and chronic abdominal wall inflammatory process to include resolution, organization, and abscess formation.
- Describe the common etiologies and sonographic appearance of abdominal wall hematomas and trauma.
- Identify the different types of abdominal hernias and their sonographic appearance.
- Identify technically satisfactory and unsatisfactory sonographic examinations of the abdominal wall and diaphragm.
- Identify the potential spaces of the peritoneum and the organs and/or ligaments that divide them on diagrams.
- Identify the potential spaces of the peritoneum on sonograms.
- State the organs located in the peritoneum.

- Describe the scanning techniques used to image the potential spaces and diseases of the peritoneum.
- Explain the role the greater omentum and mesentery play in limiting the extent of pathology.
- Recognize the sonographic appearance of benign and malignant changes seen in the peritoneum.
- Analyze sonographic images of the peritoneum for pathology.
- Draw the normal anatomy of the liver including the liver lobes and segments, fissures, ligaments, and hepatic vasculature.
- List some of the various functions of the liver.
- Discuss the laboratory values associated with liver function.
- Explain the patient preparation, scan technique, and sonographic appearance of the normal liver.
- Discuss the pathophysiology and sonographic appearance of diffuse liver diseases including fatty infiltration, hepatitis, and cirrhosis.
- Describe the differential diagnoses, clinical signs and symptoms, and sonographic appearance of cystic and solid liver lesions.
- Illustrate surface, relational, and internal anatomy of the normal gallbladder and biliary system.
- Discuss the embryologic development, common anatomic variants, and congenital anomalies of the gallbladder and biliary tree.
- Describe the physiology of the gallbladder and biliary tree and include the laboratory values associated with normal and abnormal function.
- Explain the sonographic evaluation of the gallbladder and biliary tree to include patient preparation, protocol, and demonstrate completing the examination procedure.
- Describe the embryologic development, clinical signs and symptoms, and sonographic appearance for each of the following congenital anomalies: septate gallbladder, interposition of the gallbladder, biliary atresia, and choledochal cyst.
- Describe pancreatic surface anatomy, vascular supply, and the common relational landmarks.
- Discuss the most common pancreatic congenital anomalies to include pancreas divisum, annular pancreas, and ectopic pancreas.
- Identify the endocrine and exocrine functions of the pancreas.
- Correlate laboratory values and clinical indications associated with pancreatic abnormalities, disease, and pathology.
- Explain the sonographic evaluation of the pancreas to include patient preparation, protocol, and demonstrate completing the examination procedure.
- Differentiate normal from the varying sonographic appearances associated with pancreatic disease or pathology.
- Describe the pathology, etiology, clinical signs and symptoms, and sonographic appearance for congenital diseases, inflammatory diseases, neoplastic diseases, and nonneoplastic cystic lesions.
- Describe the normal anatomy and function of the spleen.
- Describe the normal vasculature of the spleen.
- List the common causes of splenomegaly.

- Demonstrate the scanning techniques used to image the spleen.
- Identify the sonographic appearance and etiology of benign focal lesions of the spleen including splenic cyst, abscess, infarct, hematoma, and hemangioma.
- Discuss the sonographic findings of lymphoma, leukemia, and metastases of the spleen.
- Identify technically satisfactory and unsatisfactory sonographic examinations of the spleen.
- Discuss the normal anatomy of the kidneys from embryologic development to adulthood and include vasculature, location, size, and relational anatomy with other abdominal structures and organs.
- Describe the microscopic internal renal anatomy to include the nephrons and juxtaglomerular apparatus.
- Discuss the physiology of the upper urinary system.
- State the common laboratory function tests and what a variance in each test indicates regarding renal function, disease, or pathology.
- Recognize sonographic anatomy of the upper urinary tract and demonstrate the routine scanning procedure of the renal system.
- Explain the pathology, etiology, clinical signs and symptoms, and sonographic appearance of urinary tract anomalies.
- Describe the pathology, etiologies, clinical signs and symptoms, and sonographic appearance of hereditary, developmental, and acquired cystic lesions of the kidneys.
- Identify the systemic diseases that affect the kidneys.
- Describe the sonographic appearance of common benign and malignant lesions of the kidneys.
- Explain the intrinsic and extrinsic causes of hydronephrosis and the sonographic appearance of each grade.
- Describe common causes and the sonographic appearance of urolithiasis.
- Discuss the role of sonography in evaluating trauma to the kidneys.
- List infections and inflammatory processes that affect the kidneys.
- Describe the sonographic appearance of medical renal disease and list common causes of medical renal disease and renal failure.
- Identify technically satisfactory and unsatisfactory sonographic examinations of the kidneys and proximal ureters.
- List the muscles, organs, and vessels normally found in each retroperitoneal compartment
- Differentiate the sonographic appearance of inflammatory and malignant adenopathy.
- List the indications for sonographic evaluation of the retroperitoneum.
- Demonstrate the scanning techniques used to image the retroperitoneum.
- Describe the pathology, etiology, clinical signs and symptoms, and sonographic appearance of solid lesions and fluid collection found in the retroperitoneum.
- Describe the six scanning objectives the sonography should employ when retroperitoneal pathology is identified
- Analyze sonographic images of the retroperitoneum for pathology.

Course Requirements: **In order to pass the course, the student must earn 77% of the total possible points on the unit tests for the course and make a minimum score of 77% on the final exam. The student must achieve an overall course average of 77%. Grades will not be rounded. Failure to complete any of the course requirements listed below will result in an "F" for the course.**

The student will:

- Participate in/complete all classroom/laboratory experiences (such as discussion questions; quizzes; section test; case studies; concept mapping; DVD, video, web-site, or reading assignments).
- Be held responsible for the content of the entire course. The final exam is mandatory, will be cumulative, and worth 25% of the overall grade for the course.

Course Grading Scale:

93 –	100%=	A
85 –	92%=	B
76 –	84%=	C
68 –	75%=	D
0 –	67%=	F

Attendance Policy: The college attendance policy (for the classroom) is available at http://catalog.bpcc.edu/content.php?catoid=5&navoid=369#class-attendance

Course Fees: (if applicable)

Nondiscrimination Statement

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