Bossier Parish Community College
Master Syllabus

Course Prefix and Number: SONO 209 **Credit hours**: 3

Course Title: Sonography Sectional Anatomy

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:

A study of sectional anatomy of the transverse, longitudinal, and coronal planes are included with an emphasis on the organs of sonographic interest. Correlation with other imaging procedures will be emphasized. Comprehensive study of the normal anatomy and physiology of superficial structures; thyroid, parathyroid, testicles, breast, adrenal glands and prostate.

Learning Outcomes:

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

a) Neck, thyroid and parathyroid
b) Breast
c) Prostate
d) Scrotum
e) Musculoskeletal System
f) Neonatal Brain
g) Infant Hips
h) Infant Spine
i) Point of Care Sonography

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

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

- Describe the thyroid gland embryology, surface anatomy, anatomic variants, and the common relational landmarks.
- Discuss the physiology of the thyroid gland to include how each of the three thyroid hormones enables thyroid function.
- Correlate laboratory values and clinical indications associated with hyperthyroidism and hypothyroidism.
- Explain the sonographic evaluation of the thyroid gland to include patient preparation, protocol, and demonstrate the examination procedure.
- Differentiate normal from the varying sonographic appearances associated with thyroid gland disease or pathology.
- Describe the pathology, etiology, clinical signs and symptoms, and sonographic appearance for thyroid gland cysts, nodules, adenomas, goiters, thyrotoxicosis/hyperthyroidisms, hypothyroidism, thyroiditis, thyroid disease in pregnancy, and thyroid carcinoma.
- Explain the indications and guidelines for fine-needle aspiration.
- Describe the parathyroid gland embryology, surface anatomy, anatomic variants, and the common relational landmarks.
- Discuss the physiology of the parathyroid glands to include the importance of parathyroid hormone regulating calcium and phosphorus concentrations in extracellular fluid.
- Correlate laboratory values and clinical indications associated with hypercalcemia and hypocalcemia.
- Explain the sonographic evaluation of the parathyroid glands to include patient preparation, protocol, and demonstrate the examination procedure.
- Differentiate normal from the varying sonographic appearances associated with disease or pathology of the parathyroid glands.
- Describe the pathology, etiology, clinical signs and symptoms, and sonographic appearance for primary hyperparathyroidism to include adenomas, hyperplasia, and carcinoma.
- Abnormalities and pathology of the neck
- Differentiate the varying sonographic appearances associated with normal anatomy and disease or pathology of the neck.
- Describe the etiology, clinical signs and symptoms, and sonographic appearance of developmental cysts for the thyroglossal duct cyst, branchial cleft cyst, and cystic hygroma.
- Identify the usefulness of diagnostic imaging to differentiate between a hematoma and deep neck space infections.
- Describe the pathology, etiology, and important sonographic appearance and criteria to differentiate normal versus pathologic cervical lymph nodes.
- Discuss sonography's role in the evaluation of the breast.

- Explain the indications for sonography of the breast, as well as its advantages and limitations.
- Identify other modalities and newer applications used in breast imaging.
- Describe the normal breast anatomy and the corresponding appearance of the sonographic layers/zones.
- Demonstrate the sonographic techniques used in evaluating the breast.
- Illustrate the annotation methods used in breast sonography.
- Explain how patient positioning affects sonomammographic correlation and the techniques used to overcome these differences.
- Discuss ACR BI-RADS categories and risk classification for breast cancer.
- List the characteristics of simple and complicated cysts, and complex cystic/solid breast masses.
- Identify common cystic lesions found in the breast.
- Describe inflammatory and traumatic conditions that can affect the breast.
- Differentiate the sonographic and mammographic characteristics of benign breast lesions from malignant lesions.
- Identify common benign and common malignant solid breast masses.
- Discuss benign and malignant conditions that affect the male breast.
- List common sonography-guided interventional procedures used to diagnose or treat diseases of the breast.
- Discuss the normal appearance and complications that can arise in the augmented breast.
- Discuss the role of elastography in breast imaging
- Discuss embryologic development, differentiation of structures, and hormones influencing maturation of the prostate gland.
- Identify surface, relational, and internal prostate anatomy to include differentiating the four prostate zones.
- Demonstrate routine scanning procedure to include patient preparation; patient instructions; patient positions; transrectal, transabdominal, and biopsy techniques; technical considerations; and common scanning pitfalls.
- Describe the pathology, etiology, clinical signs, symptoms, and sonographic appearance of cysts in the male pelvis to include Müllerian duct and utricle cysts, seminal vesicle cyst, prostatic cyst (prostatic abscess), and diverticulum of the ejaculatory duct and vas deferens.
- Explain the pathology, etiology, clinical signs and symptoms, and sonographic appearance of benign prostatic hyperplasia.
- Identify the pathology, etiology, clinical signs and symptoms, and sonographic appearance of prostate calcifications.
- Categorize the pathology, etiology, clinical signs and symptoms, and sonographic appearance of prostatitis to include acute bacterial prostatitis, chronic bacterial prostatitis, chronic pain syndrome, and asymptomatic inflammatory prostatitis.
- Recognize sonographic characteristics of benign and malignant conditions of the prostate gland.
- Discuss the role of prostate sonography in biopsy guidance procedures and evaluation of suspected male infertility.

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- Recognize sonographic characteristics of benign and malignant conditions of the prostate gland.
- Discuss the role of prostate sonography in biopsy guidance procedures and evaluation of suspected male infertility.
- Differentiate when sonography of the musculoskeletal system is the primary versus the adjunct imaging modality in terms of sensitivity, specificity, and accuracy.
- List the indications for a musculoskeletal sonography examination for the axial skeletal joints.
- Demonstrate transducer position and manipulation techniques to obtain long axis and short axis orthogonal planes.
- Identify the normal anatomic location and sonographic signature for tendons, bursa, nerves, ligaments, bone, fibrocartilage and articulate cartilage, fat, and muscle.
- Demonstrate the sonographic evaluation for the shoulder, elbow, wrist, knee, ankle, and plantar fascia.
- Differentiate between normal and abnormal appearance related to common trauma and acute or chronic pathologic conditions.
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- Differentiate between normal and abnormal appearance related to common trauma and acute or chronic pathologic conditions.
- Describe the embryologic development of the hip joint.
- Illustrate the bones and joints of the hip.
- List the risk factors associated with developmental dysplasia of the hip.
- Define the process for sonographic evaluation of the hip.
- Describe the etiologies of hip effusion.
- Identify the sonographic appearance of hip effusion.
- Define proximal femoral focal deficiency.
- Describe the embryological development of the spine.
- Define the process for sonographic evaluation of the spine.
- List the clinical indications for sonographic evaluation of the spine.
- Describe the normal sonographic appearance of the neonatal spinal canal and cord.
- Define open and closed spinal dysraphism.
- Identify the sonographic appearance of congenital anomalies of the spine.
- Define what point-of-care sonography encompasses and how it is being utilized.
- List some of the primary applications for point-of-care sonography.
- Explain the common acoustic windows, probe placement, and anatomy seen in certain types of examinations.
- Discuss the importance of evaluating certain anatomical perspectives for possible pathologies.
- Demonstrate the clinical application and sonographic differentiation for certain types of limited examinations.

Course Requirements: **In order to pass the course, the student must earn 76% of the total possible points on the unit tests for the course and make a minimum score of 70% on the final exam. The student must achieve an overall course average of 76%. 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

Bossier Parish Community College does not discriminate on the basis of race, color, national origin, gender, age, religion, qualified disability, marital status, veteran's status, or sexual orientation in admission to its programs, services, or activities, in access to them, in treatment of individuals, or in any aspect of its operations. Bossier Parish Community College does not discriminate in its hiring or employment practices.

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