Breast Examination Content Outline

(Outline Summary)

#	Domain	Subdomain	Percentage
1	**Anatomy and Physiology**		**18%**
2	**Pathology**		**38%**
3	**Integration of Data**		**10%**
4	**Imaging Techniques and Technology**	• Protocols • Ultrasound Physics • Emerging Technology and Treatment	**34%**

(Detailed Outline)

1	Anatomy and Physiology 18%
1.A.1	Distinguish lymph nodes related to the breast
1.A.2	Assess lymph node anatomy
1.A.3	Identify age-related or hormonal sonographic changes of the breast tissue and its components
1.A.4	Identify functional units of the breast (e.g., lobes, ducts)
1.A.5	Recognize anatomy of areola, nipple, axillary tail, and accessory breast tissue
1.A.6	Identify the tissue layers of the breast and their components
1.A.7	Identify anatomical structures deep to the breast
2	**Pathology 38%**
2.A.1	Evaluate for vascularity related to a mass/lesion/ lymph node (e.g., using spectral, color, power Doppler, or emerging technology)
2.A.2	Evaluate characteristics of infectious processes
2.A.3	Evaluate skin changes associated with malignant or benign breast pathology
2.A.4	Correlate sonographic findings of lesions with the Breast Imaging Reporting and Data System (BI-RADS)
2.A.5	Assess masses by evaluating characteristics
2.A.6	Evaluate patterns on breast tissues that surround malignant tumors or inflammatory reactions

2.A.7	Identify architectural distortion in breast ultrasound
2.A.8	Evaluate malignant processes of the breast
2.A.9	Evaluate implant type, location, integrity, and complications
2.A.10	Evaluate benign findings including benign pathologies
2.A.11	Evaluate age-related physiological changes including pediatric breast tissue
2.A.12	Assess nipple discharge
2.A.13	Evaluate the male breast
2.A.14	Evaluate patterns of malignant lymph nodes
2.A.15	Evaluate lymph nodes for vaccination-related, autoimmune changes, or tattoo-associated lymphadenopathy
3	**Integration of Data 10%**
3.A.1	Correlate ultrasound findings with mammography
3.A.2	Correlate ultrasound findings with magnetic resonance imaging (MRI) results
3.A.3	Obtain pertinent clinical history from the patient and/or the medical records (e.g., risk factors)
3.A.4	Use the patient's sign and symptoms, and/or physical examination to help optimize exam
4	**Imaging Techniques and Technology 34%**
4.A	**Protocols**
4.A.1	Evaluate the breast using various scan planes (e.g., longitudinal/transverse, radial/antiradial)
4.A.2	Evaluate the breast using various scan techniques (e.g., automated breast ultrasound, elastography, fremitus, palpation, standoff pad, transducer pressure)
4.A.3	Evaluate the breast with the patient in various positions
4.A.4	Document the breast exam using standard imaging protocols (e.g., quadrants, clockface, distance from nipple)
4.A.5	Perform various measurements to assess breast anatomy and pathology
4.B	**Ultrasound Physics**
4.B.1	Identify common artifacts seen on breast
4.B.2	Adjust scanning technique when using Doppler
4.B.3	Adjust scanning technique to optimize b-mode imaging
4.B.4	Select the appropriate transducer and preset
4.C	**Emerging Technology and Treatment**

4.C.1	Understand various breast cancer treatments and its effects on follow-up imaging
4.C.2	Understand common methods of surgical localization
4.C.3	Understand the role of sonography during interventional procedures
4.C.4	Evaluate post-procedural/breast trauma site for complications and breast tissue changes (e.g. seroma, hematoma, fat necrosis, lumpectomy, mastectomy, DIEP flap, fat injections, allograft)
4.C.5	Identify biopsy markers and post-procedural markers

Knowledge, Skills, and Abilities: *The following is a list of the foundational knowledge, skills, and abilities required to complete the tasks listed in the content outline.*
Knowledge of breast anatomy, including tissue layers, functional units (lobes, ducts), areola, nipple, axillary tail, accessory tissue, and structures deep to the breast.
Knowledge of lymph node anatomy related to the breast and expected sonographic appearance.
Knowledge of benign and malignant breast pathology and disease processes, including normal vs abnormal sonographic appearances.
Knowledge of BI-RADS and ACR breast imaging standards and ability to apply standardized terminology when describing sonographic findings.
Understanding of expected and abnormal post-procedural and post-treatment findings (e.g., surgery, biopsy, trauma, reconstruction, implants).
Knowledge of the sonographer's role in breast-related interventional procedures and treatments, including preparation, sterile technique, and post-procedural assessment.
Ability to sonographically distinguish normal vs abnormal lymph nodes.
Ability to recognize age-related and hormonal sonographic changes of the breast tissue and its components.
Ability to distinguish between benign and malignant sonographic features of breast lesions and lymph nodes.
Ability to evaluate vascularity of a mass, lesion, or lymph node using Doppler and related techniques.
Ability to recognize and document architectural distortion, surrounding tissue patterns, and skin changes associated with benign and malignant processes.
Ability to correlate sonographic findings with mammography, MRI, and other prior imaging to guide targeted breast ultrasound.
Ability to relate patient history, signs and symptoms, and physical examination findings to imaging data to optimize the exam.
Ability to provide clear, accurate documentation that supports radiologist interpretation and diagnostic decision-making.
Ability to perform diagnostic breast ultrasound using appropriate scan planes, techniques, and patient positioning to fully evaluate breast anatomy and pathology.