DMS-2450: BREAST SONOGRAPHY

Cuyahoga Community College

Viewing: DMS-2450: Breast Sonography

Academic Term:
Fall 2018

Subject Code
DMS - Diagnostic Medical Sonography

Course Number:
2450

Title:
Breast Sonography

Catalog Description:
In-depth study of breast sonography. Study of breast anatomy and physiology as it pertains to medical ultrasound. Detailed discussion of breast pathologies, anatomic variants, benign and malignant lesions, and their anatomic variants, benign and malignant lesions, and their sonographic appearances. Sonographic physic pertinent to the breast ultrasound exam will be incorporated. Overview of related breast imaging modalities, breast surgical procedures, and breast pathology treatments.

Credit Hour(s):
2

Lecture Hour(s):
2

Requisites

Prerequisite and Corequisite
DMS-1950 Field Experience II or departmental approval.

I. ACADEMIC CREDIT

Academic Credit According to the Ohio Department of Higher Education, one (1) semester hour of college credit will be awarded for each lecture hour. Students will be expected to work on out-of-class assignments on a regular basis which, over the length of the course, would normally average two hours of out-of-class study for each hour of formal class activity. For laboratory hours, one (1) credit shall be awarded for a minimum of three laboratory hours in a standard week for which little or no out-of-class study is required since three hours will be in the lab (i.e. Laboratory 03 hours). Whereas, one (1) credit shall be awarded for a minimum of two laboratory hours in a standard week, if supplemented by out-of-class assignments which would normally average one hour of out-of-class study preparing for or following up the laboratory experience (i.e. Laboratory 02 hours). Credit is also awarded for other hours such as directed practice, practicum, cooperative work experience, and field experience. The number of hours required to receive credit is listed under Other Hours on the syllabus. The number of credit hours for lecture, lab and other hours are listed at the beginning of the syllabus. Make sure you can prioritize your time accordingly. Proper planning, prioritization and dedication will enhance your success in this course.

The standard expectation for an online course is that you will spend 3 hours per week for each credit hour.

II. ACCESSIBILITY STATEMENT

If you need any special course adaptations or accommodations because of a documented disability, please notify your instructor within a reasonable length of time, preferably the first week of the term with formal notice of that need (i.e. an official letter from the Student Accessibility Services (SAS) office). Accommodations will not be made retroactively.

For specific information pertaining to ADA accommodation, please contact your campus SAS office or visit online at http://www.tri-c.edu/accessprograms. Blackboard accessibility information is available at http://access.blackboard.com.

Eastern (216) 987-2052 - Voice
Metropolitan (216) 987-4344 – Voice. (216) 987-4048 – TTY.
Western (216) 987-5079 – Voice. (216) 987-5117 – TTY.
Westshore (216) 987-3900 – Voice. (216) 987-4048 – TTY.
Brunswick (216) 987-5079 – Voice. (216) 987-5117 – TTY.
III. ATTENDANCE TRACKING

Regular class attendance is expected. Tri-C is required by law to verify the enrollment of students who participate in federal Title IV student aid programs and/or who receive educational benefits through other funding sources. Eligibility for federal student financial aid is based in part on enrollment status.

Students who do not attend classes for the entire term are required to withdraw from the course(s). Additionally, students who withdraw from a course or stop attending class without officially withdrawing may be required to return all or a portion of their financial aid based on the date of last attendance. Students who do not attend the full session are responsible for withdrawing from the course(s).

Tri-C is responsible for identifying students who have not attended a course before financial aid funds can be applied to students’ accounts.

Therefore, attendance is recorded in the following ways:

- For in-person and blended-learning courses, students are required to attend the course by the 15th day of the semester (or equivalent for terms shorter than five weeks) to be considered attending. Students who have not met all attendance requirements for in-person and blended courses, as described herein, within the first two weeks or equivalent, will be considered not attending.
- For online courses, students are required to login at least two times per week and submit one assignment per week for the first two weeks of the semester, or equivalent to the 15th day of the term. Students who have not met all attendance requirements for online courses, as described herein, within the first two weeks or equivalent, will be considered not attending.

At the conclusion of the first two weeks of a semester or equivalent, instructors report any registered students who have “Never Attended” a course. Those students will be administratively withdrawn from that course. However, after the time period in the previous paragraphs, if a student stops attending a class or wants or needs to withdraw, for any reason, it is the student’s responsibility to take action to withdraw from the course. Students must complete and submit the appropriate Tri-C form by the established withdrawal deadline.

Tri-C is required to ensure that students receive financial aid only for courses that they attend and complete. Students reported for not attending at least one of their registered courses will have all their financial aid funds held until confirmation of attendance in registered courses has been verified. Students who fail to complete at least one course may be required to repay all or a portion of their federal financial aid funds and may be ineligible to receive future federal financial aid awards. Students who withdraw from classes prior to completing more than 60 percent of their enrolled class time may be subject to the required federal refund policy.

If illness or emergency should necessitate a brief absence from class, students should confer with instructors upon their return. Students having problems with coursework due to a prolonged absence should confer with the instructor or a counselor.

IV. LEARNING OUTCOMES ASSESSMENT

Occasionally, in addition to submitting assignments to their instructors for evaluation and a grade, students will also be asked to submit completed assignments, called ‘artifacts,’ for assessment of course and program outcomes and the College's Essential Learning Outcomes (ELOs). The artifacts will be submitted in Blackboard or a similar technology. The level of mastery of the outcome demonstrated by the artifact DOES NOT affect the student’s grade or academic record in any way. However, some instructors require that students submit their artifact before receiving their final grade. Some artifacts will be randomly selected for assessment, which will help determine improvements and support needed to further student success. If you have any questions, please feel free to speak with your instructor or contact the Learning Outcomes Assessment office.

V. CONCEALED CARRY STATEMENT

College policy prohibits the possession of weapons on college property by students, faculty and staff, unless specifically approved in advance as a job-related requirement (i.e., Tri-C campus police officers) or, in accordance with Ohio law, secured in a parked vehicle in a designated parking area only by an individual in possession of a valid conceal carry permit.

As a Tri-C student, your behavior on campus must comply with the student code of conduct which is available on page 29 within the Tri-C student handbook, available athttp://www.tri-c.edu/student-resources/documents/studenthandbook.pdf You must also comply with the College’s Zero Tolerance for Violence on College Property available athttp://www.tri-c.edu/policies-and-procedures/documents/3354-1-20-10-zero-tolerance-for-violence-policy.pdf

Outcomes

Course Outcome(s):
Examine and interpret factors associated with a breast ultrasound exam to include normal, abnormal, and diseased anatomy and physiology.

Objective(s):
1. 1. Provide a detailed description of the normal and abnormal anatomy and physiology of the breast and its sonographic appearance.
2. 2. Identify the sonographic characteristics, signs and symptoms, and diagnosis of benign and malignant breast pathology.
3. 3. Outline an ultrasound breast exam set up, indications, physical breast exam, and patient history.
4. 4. Describe the standard exam protocols for performing breast sonography.
5. 5. Apply principals of ultrasound physics for optimization of the breast ultrasound exam.
Course Outcome(s):
State the value of various related breast procedures

Objective(s):
1. Correlate mammography and other diagnostic breast procedures to the ultrasound breast exam.
2. Compare invasive breast procedures as to their advantages and disadvantages.

Methods of Evaluation:
1. Test and quizzes
2. Midterm final exam
3. Research paper/project
4. Online discussions
5. Worksheets

Course Content Outline:
1. Concepts
   a. Exam scanning protocols
   b. Anatomic structures of the breast
   c. Normal and abnormal physiology of the breast
   d. Breast pathology sonographic appearances
   e. Breast imaging modalities
   f. Breast surgical procedures
   g. Breast cancer risk factors
2. Skills
   a. Correlate patient history and physical findings to the breast sonography exam
   b. Use critical thinking to determine normal verses abnormal
   c. Correlate the breast ultrasound exam to other related breast imaging procedures.
3. Issues
   a. Knowledge application
   b. Problem solving
   c. Medical ethics
   d. Patient communication

TOPICAL OUTLINE
1. Normal anatomy
   a. Ducts
   b. Fibroglandular tissue
   c. Fat
   d. Skin
   e. Cooper's ligaments
   f. Muscle
   g. Fascia
   h. Ribs
   i. Nipple
   j. Vascularity
   k. Lymphatic
   l. Normal breast ultrasound appearance
2. Breast development and changes
   a. Embryologic and post pubescent development
   b. Pregnancy changes
   c. Involutional changes
   d. Physiological change and function
   e. Physiology and function
   f. Fibrous changes
   g. Breast anomalies
   h. Lactating breast
3. Breast pathologies and conditions
a. Benign Conditions and Sonographic Features  
   i. Cyst  
   ii. Galactocele  
   iii. Sebaceous cyst  
   iv. Fibroadenoma  
   v. Papilloma  
   vi. Lipoma  
   vii. Hamartoma  
   viii. Abscess and inflammation  
   ix. Traumatic changes  
   x. Fat necrosis  
   xi. Ductal ectasia  
   xii. Edema  
   xiii. Diabetic mastitis  
   xiv. Pseudoangiomatous hyperplasia  
   xv. Phyllodes  
   xvi. Radial scar  
   xvii. Gynecomastia  

b. Malignant Conditions and Sonographic Features  
   i. Ductal carcinoma in situ (DCIS)  
   ii. Invasive ductal carcinoma  
   iii. Invasive lobular carcinoma  
   iv. Medullary carcinoma  
   v. Mucinous (colloid) carcinoma  
   vi. Inflammatory carcinoma  
   vii. Phyllodes  
   viii. Lymphoma  
   ix. Metastasis  
   x. Lymph nodes  
   xi. Papillary carcinoma  
   xii. Paget's disease  

4. Patient communication, education and assessment  
   a. Accreditation of personnel and facility  
   b. Explanation of procedure  
   c. Breast cancer statistics  
   d. Breast cancer risk factors, signs and symptoms  
   e. Physical exams  
      i. BSE – Breast Self Exam  
      ii. CBE – Clinical Breast Exam  
   f. Patient history  
   g. Indications/contraindications  
   h. American Cancer Society guidelines  
      i. Bi-Rads  

5. Breast instrumentation and technique  
   a. Image optimization  
      i. Transducers selection  
      ii. Focal zone  
      iii. Doppler color and power  
      iv. Artifacts  
      v. Standoff pad  
   b. Scan planes and protocols  
   c. Positioning  
   d. Annotation  
   e. Compressibility  
   f. Echo palpation  

6. Mammographic correlation  
   a. View selection  
   b. Triangulation
c. Sonographic vs. mammographic appearance
d. Digital mammography

7. Other diagnostic breast procedures and correlations
   a. Ductography
   b. CT – Computerized Tomography
   c. MRI – Magnetic Resonance Imaging
   d. Sentinel node
e. Histology of breast tissue
   f. Scintimammography
g. Elastography

8. Invasive procedures
   a. Needle Localizations
   b. Core biopsy
   c. FNA – Fine Needle Aspiration
   d. Mammothomy
e. ABBI – Advanced Breast Biopsy Instrumentation
   f. Cyst aspiration
g. Abscess drainage
h. Breast specimen imaging
   i. Stereotactic procedure
   j. Tram flap
   k. Mastectomy
   l. Clip placement
   m. Sterile technique
   n. Post procedural care

9. Other imaging considerations
   a. Breast implants
   b. Breast reduction
   c. Hormone therapy
   d. Neo-adjuvant chemotherapy
   e. Post radiation changes
   f. Post mastectomy reconstruction
   g. Male breast
   h. 3D/4D imaging
   i. Elastography

Resources


