RADT-2620: ANATOMY AND PATHOLOGY OF THE BREAST

Cuyahoga Community College

Viewing: RADT-2620 : Anatomy and Pathology of the Breast

Board of Trustees:
March 2019

Academic Term:
Fall 2019

Subject Code
RADT - Radiography

Course Number:
2620

Title:
Anatomy and Pathology of the Breast

Catalog Description:
Anatomy, physiology and pathology of the breast, including benign and malignant conditions, stages of breast cancer and treatment options.

Credit Hour(s):
1

Lecture Hour(s):
1

Requisites

Prerequisite and Corequisite
Departmental approval: admission to Mammography program.

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.
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 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.pdfYou 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):
Describe breast anatomy and structure.

Essential Learning Outcome Mapping:
Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

Objective(s):
1. Identify breast anatomy and physiology internally and externally
2. Discuss the factors and physiologic changes that will affect breast tissue composition.
3. Identify physical changes in the breast.
4. Describe breast structure, developmental stages and the differences between the male and the female breast.
5. Identify and label the breakdown of a single lobe of the breast.
6. Identify the three arterial branches supplying the breast and the three venous drainage channels.
7. Describe the lymphatic system and lymphatic drainage.

Course Outcome(s):
Describe the importance of clinical and self breast examinations and mammograms.

Essential Learning Outcome Mapping:
Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

Objective(s):
1. Compare and contrast clinical and self-breast examinations and explain current evidence-based data regarding each practice.
2. Identify the significance of breast cancer detection through patient screening and diagnostic mammograms.
3. Explain the components and importance of a correlative physical breast assessment.
4. Correlate clinical breast changes with imaging findings and comparison with previous mammograms.
5. Identify and label mammographic anatomical structures when presented with a mammographic image.
6. Correlate breast anatomical structures to mammographic anatomical structures.

Course Outcome(s):
Explore breast pathologies, detection and diagnosis.

Essential Learning Outcome Mapping:
Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

Objective(s):
1. Identify the mammographic appearance of pathologies.
2. Describe the etiology, mammographic appearance, diagnosis and treatment of benign breast pathologies.
3. Describe the etiology, mammographic appearance, diagnosis and treatment of malignant breast pathologies.

Course Outcome(s):
Identify breast cancer risks, treatment and staging.

Essential Learning Outcome Mapping:
Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

Objective(s):
1. Identify the high and low risk factors limited to breast cancer.
2. Describe assessment categories and the recommended clinical follow up.
3. Describe treatment options for breast cancer.
4. Explain breast cancer stages 0 to IV and stage characteristics.
5. Explain tumor node metastasis (TNM) classifications of breast cancer.

Methods of Evaluation:
1. Participation and discussion
2. Written assignments
3. Case studies
4. Exams
5. Quizzes
6. Other methods deemed appropriate by department
Course Content Outline:

1. Definition of the Breast
   a. Male vs. female
   b. Developmental stages
      i. Fetal
      ii. Puberty
      iii. Menstruation
      iv. Pregnancy
      v. Lactation
      vi. Menopause
      vii. Post-menopause
   c. Breast landmarks
      i. Quadrants
      ii. Clock face references
      iii. Region references

2. Gross Anatomy of the Normal Breast
   a. External anatomy
      i. Nipple
      ii. Areola
         1. Montgomery's glands
         2. Morgagni's tubercles
      iii. Skin
         1. Sebaceous glands
         2. Sweat (sudiferous) glands
         3. Hair follicles
      iv. Axillary tail
   b. Internal anatomy
      i. Fascial layers
      ii. Retromammary (fat) space
      iii. Breast parenchymal components
         1. Fibrous tissues
         2. Glandular (secretory) tissues
            i. Glandular lobes
               1. Lobules
               2. Terminal ductal lobular unit (TDLU)
         3. Adipose (fatty) tissues
         4. Connective and support stroma
            a. Cooper's ligaments
            b. Extralobular/intralobular stroma
         5. Lymphatic channels and drainage from the breast
         6. Circulatory (blood supply) system
            a. Arteries
            b. Veins
      iv. Pectoral muscle
         1. Location
         2. Relevance
   c. Histology of the breast
      1. TDLU
         a. Extralobular terminal duct
         b. Intralobular terminal duct
         c. Ductal sinus (acinus)
      2. Cellular components
         a. Epithelial cells
         b. Myoepithelial cells
         c. Basement membrane

3. Mammographic Appearance of Breast Anatomy
a. External anatomy
b. Internal anatomy
   i. Variances
   ii. Life cycle changes
4. Breast Anomolies
   a. Asymmetry
   b. Inverted nipples
   c. Accessory nipples
   d. Accessory breast tissue
   e. Other (e.g. congenital)
5. Clinical Breast Changes (size, location, duration)
   a. Lumps
      i. Pain
      ii. Mobility
      iii. Other associated indications (e.g. trauma, fever, antibiotics)
   b. Thickening
   c. Swelling
   d. Dimpling
   e. Skin irritation and lesions (e.g. moles, keratosis, cysts, ulcers, blisters, scaling)
   f. Pain
      i. New onset
   g. Discharge
      i. New onset
      ii. Color of discharge
      iii. Ipsilateral or bilateral
      iv. Single duct or multiple ducts
      v. Spontaneous vs. expressed
   h. Nipple retraction, inversion and areolar changes
      i. New onset
      i. Edema
   j. Erythema
   k. Mammaplasty
      i. Breast Augmentation
         1. Types
            a. Silicone
            b. Saline
         2. Location
            a. Subglandular
            b. Subpectoral
      ii. Breast lift
      iii. Breast reduction
      iv. Other
   l. Reconstructive surgery
      i. Autologous (e.g. TRAM flap, DIEP flap, latissimus dorsi flap)
      ii. Tissue expander
      iii. Implant
      iv. Other
   m. Postsurgical excision
   n. Radiation changes
   o. Other
6. Correlative Physical Breast Assessment
   a. Breast examination findings reported by patient or physician
      i. Normal breast examination features
         1. Consistent features
         2. Variations in parenchyma
         3. Fibrocystic changes
      ii. Characteristics of abnormal findings
         1. Redness
         2. Infection
a. Antibiotic treatment
3. Abscess
4. Nipple discharge
5. Mass
6. Breast pain
   a. New onset
7. Skin findings
8. Nipple findings
9. Previous surgeries
b. When to perform
c. Visual inspection
d. Palpation techniques
e. Documentation of findings
   i. In reference to breast landmarks
   ii. Clock face description
   iii. Accuracy of measurements
f. Radiopaque marking devices (e.g. palpable vs. skin lesions)
g. Mammographic correlation
7. Mammographic Appearance of Pathology (definition, location)
a. Masses
   i. Margins
      1. Circumscribed
      2. Ill-defined (indistinct)
      3. Lobulated
      4. Spiculated
   ii. Asymmetric density
   iii. Focal asymmetry
   iv. Calcifications
      1. Dermal
      2. Internal
   3. Causes
      a. Cystic changes
      b. Sutural
      c. Vascular
      d. Malignancy
4. Characteristics
   a. Number (quantity)
   b. Size
   c. Shape
d. Distribution
   i. Clustered or grouped
   ii. Segmental
   iii. Regional
   iv. Diffuse (scattered)
   v. Multiple groups
   vi. Margins
e. Benign characteristics (typical)
   i. Coarse
   ii. Rim or eggshell
   iii. Milk of calcium (teacup-like)
   iv. Dystrophic
   v. Vascular
   vi. Skin (superficial)
   vii. Secretory
   viii. Fat necrosis
   ix. Punctate
f. Suspicious morphology (nondeterminate characteristics)
i. Indistinct (amorphous)
ii. Pleomorphic, granular (clustered)
iii. Irregular
iv. Linear
v. Casting

8. Reporting Terminology (e.g. BI-RADS)
   a. Assessment categories
   b. Recommendations

9. Benign Breast Pathology
   a. Etiology, mammographic appearance, diagnosis and treatment
      i. Cyst
      ii. Galactocele
      iii. Fibroadenoma
      iv. Lipoma
      v. Hamartoma (fibroadenolipoma)
      vi. Papilloma
      vii. Ductal ectasia
      viii. Breast infection/abcess
      ix. Hematoma
      x. Fat necrosis
      xi. Radial scar
      xii. Lymph node
      xiii. Gynecomastia

10. High Risk Breast Pathology
    a. Etiology, mammographic appearance, diagnosis and treatment
       i. Atypical ductal hyperplasia
       ii. Papilloma with atypia
       iii. Papillomatosis
       iv. Atypical lobular hyperplasia
       v. Lobular carcinoma in-situ
       vi. Phyllodes tumor

11. Malignant Breast Pathology
    a. Etiology, mammographic appearance, diagnosis and treatment
       i. Ductal carcinoma in-situ
       ii. Invasive/infiltrating ductal carcinoma
       iii. Invasive lobular carcinoma
       iv. Paget's disease
       v. Sarcoma
       vi. Tubular
       vii. Medullary
       viii. Medullary
       ix. Papillary
       x. Metastatic carcinoma

12. Breast Cancer Classifications
    a. Stage Characteristics
       i. Description
          1. Size
          2. Invasive vs. noninvasive
          3. Lymph node involvement
          4. Spread beyond the breast
       ii. Stages
          1. Stage 0
          2. Stage I
          3. Stage II
          4. Stage III
          5. Stage IV
    b. TNM classification characteristics
i. TNM description
   1. Size
   2. Lymph node involvement
   3. Metastasis
ii. T-size
   1. TX
   2. T0
   3. Tis
   4. T1, T2, T3, T4
iii. N-lymph node involvement
   1. NX
   2. N0
   3. N1, N2, N3
iv. M-metastasis
   1. MX
   2. M0
   3. M1

c. Cell grade
   i. Definition
   ii. Grade 1
   iii. Grade 2
   iv. Grade 3
d. Multifocal
e. Multicentric
f. Hormone receptors and HER2
   i. Importance of tests
   ii. Estrogen
   iii. Progesterone
   iv. HER2

13. Hormonal Influences
   a. Birth control pills
   b. Estrogen
   c. Progesterone
   d. Prolactin
e. Testosterone
f. Other

Resources


Resources Other

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