RADT-2510: FUNDAMENTALS OF MAMMOGRAPHY

Cuyahoga Community College

Viewing: RADT-2510: Fundamentals of Mammography

Board of Trustees:
2012-06-28

Academic Term:
2012-08-27

Subject Code
RADT - Radiography

Course Number:
2510

Title:
Fundamentals of Mammography

Catalog Description:
Introduction to mammography, historical development, patient education and assessment. Anatomy, physiology and pathology of the breast, including benign and malignant conditions, stages of breast cancer and treatment options. Basic and advanced positioning techniques including special cases such as post surgical breast. Case studies and mammography film critique. Study of physics of mammography, instrumentation equipment and quality assurance emphasizing image processing quality control. Modular courses RADT-251A, RADT-251B, RADT-251C and RADT-251D together will also meet requirements for this course.

Credit Hour(s):
4

Lecture Hour(s):
4

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
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, in part, based on your 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 the 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 will be recorded in the following ways:

For in-person courses, students are required to attend the course by the 15th day of the semester, or equivalent for terms shorter than 5-weeks, to be considered attending. Students who have not met all attendance requirements for an in-person course, as described herein, within the first two weeks of the semester, or equivalent, will be considered not attending and will be reported for non-attendance and dropped from the course.

For blended-learning courses, students are required to attend the course by the 15th day of the semester, or equivalent for terms shorter than 5-weeks, or submit an assignment, to be considered attending. Students who have not met all attendance requirements for a blended-learning course, as described herein, within the first two weeks of the semester, or equivalent, will be considered not attending and will be reported for non-attendance and dropped from the course.

For online courses, students are required to login in at least two (2) times per week and submit one (1) assignment per week for the first two (2) weeks of the semester, or equivalent to the 15th day of the term. Students who have not met all attendance requirements for an online course, as described herein, within the first two weeks of the semester, or equivalent, will be considered not attending and will be reported for non-attendance and dropped from the course.

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, 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 class work because of a prolonged absence should confer with the instructor or a counselor.

IV. 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

Objective(s):
1. Discuss the history of mammography.
2. Demonstrate appropriate patient contact techniques/skills relative to patient assessment and education.
4. Identify anatomical structures of the breast.
5. Describe changes in breast tissue as they relate to hormones, pregnancy, lactation, and menopause.
6. Describe the staging process and treatment options of breast cancer.
7. Demonstrate basic and special positioning protocols.
8. Define medical terms associated with mammography and breast cancer.
9. State components and specifications of various mammography units.
10. Develop a quality assurance plan for a mammography suite or department.

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**Methods of Evaluation:**
1. Participation and discussion
2. Observation
3. Written assignments
4. Case studies
5. Exams
6. Quizzes
7. Standardized certifying examinations
8. Other methods deemed appropriate by department

**Course Content Outline:**
1. Historical development of mammography
2. Patient contact
   a. Patient history
   b. Physical and emotional needs of patient
   c. Risk factors and assessment
   d. Psychosocial issues/cop ing mechanisms
   e. Patient education
3. Radiation
   a. NCRP regulations
   b. Equipment operation
   c. Radiation exposure risks
4. Breast anatomy
   a. Related terminology
   b. Gross anatomical structures
   c. Breast histology
   d. Blood flow and lymphatic system
   e. Mammographic image
5. Breast pathology
   a. Breast tissue changes
      i. Hormones
      ii. Pregnancy
      iii. Lactation
      iv. Menopause
   b. Benign breast conditions
   c. Clinical conditions of breast disease
   d. Malignant breast calcifications
   e. Ductal carcinoma
      i. Definition
      ii. Evaluation, diagnosis and mammographic image
   f. Lobular carcinoma
      i. Invasive
      ii. In-situ
   g. Breast cancer staging
      i. Staging process
      ii. Lymph node involvement
      iii. Treatment options
   h. Related terminology
      i. Case studies of the normal and pathological mammogram
6. Mammography techniques
   a. Preparation for exam
   b. Basic positioning protocol
      i. Craniocaudal and mediolateral oblique projections
      ii. Technical factors of basic projections
iii. Compression effects
iv. Related terminology
c. Special positioning protocol
   i. Tangential (TAN)
   ii. Craniocaudal and mediolateral oblique projections
iii. Technical factors of basic projections
iv. Compression effects
v. Magnification
vi. Cleavage
vii. Related terminology
viii. Case studies of quality images to include image critique
d. Special circumstance patients
e. American College of Radiography (ACR) labeling codes
7. Mammography physics
   a. Components and design characteristics of film-screen units
      i. kVp range
      ii. Mammography tube (anode, filtration, windows, etc.)
      iii. Automatic Exposure Control (AEC)
   iv. Grids
   v. Beam restriction devices
   vi. System geometry
      1. Source to image receptor distance (SID)
      2. Object image receptor distance (OID)
      3. Magnification, etc.
   vii. Compression devices
   viii. Specifications of components
      1. Half value layer (HVL)
      2. Focal spot size
      3. Image receptor
      4. Film, screen and cassettes
   ix. H and D curve
   x. Instrumentation
      1. Processing methods
      2. Processing conditions
   xi. Techniques in film-screen mammography
      1. Selection of technical factors
      2. Breast compression
      3. Mean glandular dose for two-view study
   b. Quality assurance program
      i. Plan criteria and goal setting
      ii. Implementation procedures
      iii. Evaluation and corrective action
      iv. ACR quality control tests
      v. Annual ACR physicist testing
   c. Digital mammography and components
      i. Creating and processing the digital image
      ii. Image receptor
         1. Full field digital mammography FFDM-CR (computed radiography)
         2. Full field digital mammography FFDM-DR (digital radiography)
      iii. Workstations
         1. Acquisition
         2. Review
      iv. Hard copy printer
      v. Computer aided detection (CAD)

Resources


American College of Radiology. "ACR Mammography Manual"

American Registry of Radiologic Technologists (ARRT). "Content Specifications for the Advanced Level Certification in Mammography"

"Radiation Protection for Medical and Allied Health Personnel"

"Quality Assurance for Diagnostic Imaging"

U. S. Department of Health and Human Services. "Quality Determinants of Mammography Clinical Practice Guidelines"

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"News magazine" 2011-01-01 00:00:00.0.

"Bi-weekly news magazine" 2011-01-01 00:00:00.0.

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