

**Middlesex Community College**

**SYALLBUS**

**I. Course Title: CAT \*206 Image Display, Post Processing and Quality Assurance II**

**II. Credits:** 3

**III. Prerequisites:** Admission to the Computed Tomography Program, ARRT Registered Radiographer, CAT201, CAT202, CAT203, CAT204 with a "C" or better for all. Must be a registered Radiographer (ARRT)

**IV. Semester:** Sprring 2018

**V. Instructor:** Jason Bohn, B.S., RT (R)(CT)  
Office Hours: By appointment  
Phone: 860-358-6293  
Email: jason.bohn@midhosp.org

**VI. Course Description:** This course will advance the students to advanced imaging parameters. The formation of computed tomography image is discussed as well as essential quality control and assurance testing..

**VII. Course Text:** **Recommended Not Required: Computed Tomography**, Seeram, 2009, Elsevier.  
**Required: Computed Tomography Review**, DeMaio, 20011, Elsevier

**VIII. Course Objectives:** At the end of this course, the student will be able to:

1. Explain Radiation Physics as it applies to Computed Tomography
2. Identify between CT system Principles
3. Describe Image Processing
4. Explain Image Quality Testing

**IX. Course Goals:**

1. Provide students with the opportunity to explain radiation physics as it relates to CT.
2. Provide students the opportunity to identify and operate CT systems.
3. Provide students the opportunity to describe image processing.
4. Provide student the opportunity to demonstrate and explain Image quality testing.

**X. General Unit Outline:**

- I. Physical Principles of CT
- II. CT Systems
  - a. Instrumentation
  - b. Equipment components
  - c. Slip ring technology
- III. Data acquisition and Image Reconstruction

- IV. Basic Instrumentation
  - a. Pitch
  - b. Volume coverage
  - c. Collimation, table speed
  - d. Scan time
  - e. Reconstruction increments
- V. Image post processing
- VI. Image quality
  - a. Spatial and contrast resolution
  - b. Slice sensitivity
  - c. Accuracy and uniformity
  - d. Image artifact
- VII. Radiation Dose
  - a. Radiation quantities and units
  - b. Radiation bio-effects
  - c. Factors affecting dose
  - d. Modulation and optimization

**XI: Course Presentation:** This course consists of the following components:

Assignments	150 points
Final Exam	50 points
Total Points	200 points

**XII: Grade Scale:**

94 = A	83 = B -
92 = A -	80 = C +
89 = B +	77 = C
86 = B	76 = F

## **ADDITIONAL COLLEGE INFORMATION:**

### **IMPORTANT COLLEGE POLICIES!! PLEASE READ CAREFULLY!**

For information about the college's policies and procedures regarding academic honesty, accessibility/disability services, attendance, audio-recording in the classroom, grade appeals, plagiarism, religious accommodations, weather and emergency closings, and more, please go to the following website:

[www.mxcc.edu/catalog/syllabus-policies/](http://www.mxcc.edu/catalog/syllabus-policies/) or scan the QR code with your smart phone. Also, please become familiar with the policies regarding nondiscrimination, sexual misconduct, and general student conduct at the following website: [www.mxcc.edu/nondiscrimination/](http://www.mxcc.edu/nondiscrimination/).

### ***NON-DISCRIMINATION STATEMENT***

*Middlesex Community College does not discriminate on the basis of race, color, religious creed, age, sex, national origin, marital status, ancestry, present or past history of mental disorder, learning disability or physical disability, sexual orientation, gender identity and expression or genetic information in its programs and activities. In addition, the College does not discriminate in employment on the additional basis of veteran status or criminal record. The following people have been designated to handle inquiries or complaints regarding non-discrimination policies and practices:*

*Primary Title IX Coordinator*

*Dr. Adrienne Maslin*

*Dean of Students/Title IX and Section 504/ADA Coordinator*

*[amaslin@mxcc.edu](mailto:amaslin@mxcc.edu); 860-343-5759; Founders Hall Room 123*

*Secondary Title IX Coordinator*

*Ms. Mary Lou Phillips*

*Director of Human Resources, Middlesex Community College*

*[mphillips@mxcc.edu](mailto:mphillips@mxcc.edu); 860-343-5751; Founders Hall Room 115*

*Secondary Title IX Coordinator*

*Ms. Queen Fordham*

*Coordinator of the Meriden Center Welcome Desk*

*[qfordham@mxcc.edu](mailto:qfordham@mxcc.edu); 203-608-3011*

**CELL PHONE POLICY: \*Whether in clinical or class, personal cell phones should be placed on silent mode and put away so that professional activities are not disrupted. Students are not permitted to “text” during class or clinic.**

**CAT\*206 – CT Image Display, Post Processing and Quality Assurance II**  
 Course Topics and Schedule

<b>Week</b>	<b>Study Topic(s)</b>	<b>Assignment(s)</b>
1	CT system principles	Module 1 Assignment 1
2	CT system principles cont.	
3	Image processing	Module 2 Assignment 1
4	Image processing	
5	Image processing	Module3 Assignment 1
6	Image Quality Tests	
7	Image Quality Tests cont.	Module 4 Assignment 1
8	Image Quality Tests cont.	
9	Lab on spatial and contrast resolution	Module 5 Assignment 1
10	Lab on temporal resolution and linearity	
11	Lab on noise and uniformity	Module 6 Assignment 1
12	Exam review	
13	Exam review	
14	Final Exam	Accumulative

**\*SUBJECT TO CHANGE WITH NOTIFICATION\***