

**Middlesex Community College**

**SYALLBUS**

**I. Course Title: CAT \*202 - Image Display, Post Processing and Quality Assurance I**

**II. Credits: 2**

**III. Prerequisites:** Admission to the Computed Tomography Program, ARRT Registered Radiographer

**IV. Semester:** Fall 2018

**V. Instructor:** Jason Bohn, MBA, RT (R)(CT)  
Office Hours: By appointment  
Phone: 860-358-6293 7:00am – 3:30pm  
Email: jason.bohn@midhosp.org

**VI. Course Description:** This course will introduce students to imaging parameters in Computed Tomography. The formation of computed tomography images is discussed as well as the essential components parts of a CT imaging system. *Prerequisites: Admission to the Computed Tomography Program, ARRT Registered Radiographer*

**VII. Course Text:** **CT Basics Institutional Software, [www.asrt.org/CTBasics](http://www.asrt.org/CTBasics).**  
**Course References:** **Computed Tomography**, Seeram, 2009, Elsevier.  
**Mosby's Exam review for Computed Tomography**, 3rd Edition, DeMaio, Elsevier, ISBN: 9780323416337

**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	200 points	80%
Final Exam	50 points	20%
Total	250 points	100%

**XII: Grade Scale:**

235/250= 94 = A	207/250= 83 = B -
230/250= 92 = A -	200/250= 80 = C +
222/250= 89 = B +	192/250= 77 = C
215/250= 86 = B	188/250= 75 = 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/).

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*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*

### **CAT\*202 – CT Image Display, Post Processing and Quality Assurance I**

#### **Course Topics and Schedule**

<b>Module</b>	<b>Study Topic(s)</b>	<b>Assignment(s)</b>	<b>Points</b>
1	Introduction, Fundamentals	Mod1 Assignment 1	25
2	Equipment and Instrumentation	Mod 2 Assignment 1	25
3	Data Acquisition	Mod 3 Assignment 1	25
4	Image Processing and Reconstruction	Mod 4 Assignment 1	25
5	Patient Safety	Mod 5 Assignment 1 Mod 5 Assignment 2	25 25
6	Image Quality	Mod 6 Assignment 1 Mod 6 Assignment 2	25 25
	Final Exam Activity	Accumulative	50
Total			250

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