Medical Imaging Program
MI 132: Imaging Principles and Equipment
Fall 2022
Unit 3: X-Ray Tube, Housing, Anode

Due: 9/27/22
Textbook: Chapter 5 pgs. 53 – 58 (stop at cathode)
Objectives:

- *List the four essential conditions for the production of x-rays to occur and how each is met.*
- *Identify and describe the components and function of diagnostic x-ray tubes.*
- *Discuss the construction and identify the purpose of the envelope and the protective housing.*
- *Discuss characteristics of the anode and anode targets in terms of materials used and construction.*
- *Identify the components and describe the function of a rotating anode and induction motor*
- *Explain the line focus principle*
- *Explain the anode heel effect*

Lecture 1:

1. What is the purpose of the protective housing?

2. What components make up the protective housing?

3. Identify the 3 main components of the x-ray tube:

4. What type of envelope best extends tube life and why?

5. What area on the envelope is the desired exit point for x-ray photons?

6. What materials are used in the construction of the anode and why?

7. List the advantages of the rotating anode.

8. List and describe the components of the induction motor as well as its operation.

9. Explain what is meant by actual focal spot size and effective focal spot size.

10. Explain the anode heel effect.