

**MI 132 – Imaging Principles and Equipment**  
**Class Preparation Assignment #4**  
**Unit 2 – X-ray Circuit**

**Due: Monday 9/19/2022**

**Textbook Chapter 4 (p. 34-52)**

**Objectives:**

1. *Identify the general components and functions of the x-ray circuit to include the main (tube) and filament circuits.*
2. *Compare generators in terms of radiation produced and efficiency (single-phase, three-phase six- and twelve-pulse, and high frequency).*
3. *Explain the basic principles of operation of the x-ray circuit from incoming power to x-ray production.*

**Questions:**

1. **Draw, label and describe the purpose of** each component of the x-ray circuit.
  - a. Differentiate between the primary, secondary and filament circuits. Identifying their main role in the production of x-rays.
  - b. Label and describe the purpose of the main power switch, circuit breakers, autotransformer, timer circuit, step-up transformer, mA meter, rectifiers, x-ray tube, rheostat, step-down transformer.



7. Define voltage ripple. Identify the associated voltage ripple for fully-rectified single-phase, three-phase six pulse, three-phase twelve pulse and high frequency generators.

8. Identify the difference between filament and tube current.