There are various technologies available for the acquisition and display of digital radiographic images. A division has historically existed between “computed radiography” (CR) using photostimulable storage phosphors placed in a cassette holder with subsequent processing in a reader, and “direct radiography” (DR) using a detector with integrated electronics and direct readout and image display. In 2005, these distinctions are less obvious, as some storage phosphor (PSP) devices are automated with direct image display, and some direct flat-panel devices are used like a portable cassette. Generally speaking, rather than distinguishing digital detectors based on “CR versus DR”, consideration of cassette versus cassetteless digital radiography is perhaps warranted as the technology advances. Besides the venerable cassette-based PSP detector and plate reader for large field of view imaging (35 × 43 cm), digital detector technologies now available include PSP line-scan systems in a cassetteless enclosure, optically coupled CCD-camera systems, fiber-optically coupled slot-scan CCD array detectors, indirect x-ray conversion scintillators and thin-film-transistor (TFT) photodiode arrays, and direct x-ray conversion semi-conductors layered on TFT detector arrays. Dedicated digital mammography detectors use similar technologies, with appropriate tuning for resolution and speed. Detective quantum efficiency measurements, equipment specifications, unique acquisition techniques (e.g., digital tomosynthesis and dual energy radiography), PACS/RIS integration and quality control issues are reviewed in the presentation.

Learning Objectives:

- To describe digital radiography in general terms, and compare with screen-film detectors
- To understand acquisition and information flow of digital radiography devices
- To compare cassette and cassetteless operation in terms of resolution, dose efficiency and signal to noise ratio
- To describe new data acquisition and image processing techniques
- To consider PACS/RIS interface and design features for digital radiography