Since the commercial introduction of digital subtraction angiography (DSA) in 1980, the technique has found widespread clinical applications. The advantages of DSA in general vascular imaging are well established. Some of the advantages are the ability to detect relatively small concentration of iodine and the real time availability of processed images. The advantages of digital acquisition has lead to the inclusion of DSA equipment in most of the general interventional and cardiovascular imaging installations. This presentation will describe the fundamental principles of digital angiography and the requirements for different components in the imaging chain. Factors contributing to the overall spatial, temporal, and contrast resolution will also be discussed. Various data acquisition and processing schemes and their relevance to several cardiac and other imaging applications will be presented. This will be followed by a discussion of the recent developments in the design and construction of new x-ray detectors that will probably replace the current image intensifier television (II-TV) imaging chain. Finally, corrections for physical degradation factors such as scatter and veiling glare and pincushion distortion which are necessary for quantitative angiography will be discussed.

Educational Objectives:

1. Present fundamental principles of digital subtraction angiography.
2. Describe the requirements for different components in the imaging chain.
3. Present current areas of investigation.