

Advanced Concepts of PACS, DICOM and Teleradiology Systems Maintenance - Level V

Course Length: 1 Week
CEUs Awarded: 4

COURSE INTRODUCTION

As today's imaging modalities become integrated into a Picture Archiving and Communications System (PACS), service professionals must maintain networks as well as imaging systems. The Advanced Concepts of PACS, DICOM and Teleradiology Systems Maintenance - Level V course is a hands-on course designed to teach the skills necessary to service these systems. Heavy emphasis is placed on network topologies, DICOM compatibility, hardware components and network system integration. The lectures, hands-on lab procedures and documentation are designed to provide the student with the knowledge to maintain these systems.

Day 1

- I. Introduction to Digital Imaging
 - A. How bits and bytes produce images
 - B. Pixels and Voxels
 - C. Advantages of Digital Imaging
- II. Introduction to Digital Diagnostic Imaging Techniques
 - A. Digital Fluoroscopy
 - B. Computed Radiography
 - C. Digital Radiography
 - D. Digital Mammography
 - E. Digital Dental
 - F. Computed Tomography
 - G. Nuclear Medicine
 - H. Ultrasound
 - I. Magnetic Resonance
 - J. Film Digitizing

Day 2

- I. Introduction to Networking
 - A. LAN and WAN
 - B. Network Protocols
 - C. Hubs, Repeaters, Bridges, Routers
 - D. Token Ring, FDI and ATM
 - E. File Servers, Workstations and Gateways
 - F. Network Cabling
 - G. Basic Network Topologies

COURSE OBJECTIVES

- At the conclusion of this course attendees will be able to:
- Understand terms associated with digital imaging.
 - Describe the different types of digital imaging modalities.
 - Understand networking terms, protocols and topologies.
 - Understand IP addressing, network masking and subnetting.
 - Describe and understand PACS functions, benefits, terms, components and interfacing with modalities and HIS/RIS.
 - Read and understand a DICOM Conformance Statement.

II. Introduction to Network Operating Systems and IP Addressing

- A. Peer to Peer Networks
- B. Client-Server Networks
- C. IP Addressing
- D. Classes of IP Addresses
- E. Network Masking and Subnetting
- F. Network Routing
- G. MAC Addresses
- H. Domain Name Service (DNS)

III. Introduction to Digital Imaging

- A. Define PACS
- B. Functions and benefits of PACS
- C. Define DICOM
- D. HIS and RIS
- E. 'Short Term' and 'Long Term' Storage
- F. Types of Workstations
- G. Components of a Basic PACS network

Day 3

- I. Quiz 1
 - A. Introduction to Digital Imaging
 - B. Introduction to Digital Diagnostic Imaging Techniques
 - C. Introduction to Networking

PREREQUISITES FOR ADMISSION

It is recommended attendees possess an associates degree in electronics or equivalent electronics and service experience. A high degree of familiarity with the Windows Operating System would also be helpful.

II. PACS in Detail

- A. Matrix Server
- B. How PACS interfaces with HIS and RIS
- C. Typical PACS components
- D. DICOM Services
- E. PACS Servers
- F. PACS Archiving
- G. Workstation types and functions
- H. Printers and printer selection
- I. Film digitizers
- J. Dictation and reportingg
- K. Disaster Recovery
- L. Successful PACS Implementation

III. Miscellaneous Information You Want to Know

- A. IHE, EMR and EHR
- B. HIPPA Security Rule
- C. Disaster Recovery
- D. CAD
- E. Post-Processing
- F. Voice Recognition Software

Day 4

- I. Quiz 2
 - A. Introduction to Network Operating Systems and IP Addressing
 - B. Introduction to PACS
 - C. PACS in Detail
- II. Hands-on PACS
 - A. Networking a PACS
 - B. PACS functions
 - C. Workstation tools and functions

III. Introduction and Overview to DICOM

- A. Introduction to the DICOM Standard
- B. DICOM terms and acronyms
- C. Reading a DICOM Conformance Statement

Day 5

- I. Course Review
- II. Final Exam
- III. Course Critique