

## **Course 320: Creating the Systems Architecture (4 days)**

### **Course Description...**

The architectural definition of a system is the documented collection of architectural decision elements that will be used to implement the system. This course explores the components of the system architecture and the processes for creating the architecture.

### **Learning Objectives...**

- Understand the basic concepts of system architecture.
- Distinguish among the various approaches to creating a systems architecture.
- Differentiate between systems architecture, software architecture and systems design.
- Review the components of system architecture and the trade-offs when creating an architecture.
- Present best practices of system architects.

### **Who should attend...**

Project managers, IT management, systems designers, systems analysts.

### **Prerequisites...**

A good general knowledge of Information Technology concepts.

**See next page for a detailed course outline...**



## **Course Outline...**

### **Introduction and Overview**

Course Objectives

## **Unit 1: What Is a System Architecture**

Unit Objectives

### **Systems and Software Engineering**

#### **Architecture**

- Perspective
- Why do we need an architecture?
- Views of architecture
- Architectural levels
- Uses for an architecture
- Characteristics of architecture selection

#### **Modeling Architecture**

- Characteristics of an architectural model
- Architectural models

## **Unit 2: Systems Architecture Approaches**

Unit Objectives

### **Generic Layered Architectural Model**

### **Architecture Definition Languages**

### **Zachman Framework**

#### **Rational 4+1 View**

- Logical View
- Development View
- Process View
- Physical View

#### **Approaches to Architecture Structure**

- Fred Brooks Conceptual Structure
- Edsger Dijkstra partitioned structures
- David Parmas software structures

#### **Enterprise Architecture Considerations**

- Extended Enterprise Architecture Framework (E2AF)

### **Service-Oriented Architecture Approaches**



## Unit 3: Systems Architecture and Design

### Unit Objectives

#### Life Cycle Interaction

- Parallel life cycles
- Architecture choices and design choices

#### Architecture Implementation

- Translating architecture to design
- Blueprints and roadmaps

## Unit 4: Systems Architecture Considerations and Trade-offs

### Technology Guiding Principles

#### Hardware Architecture

- Distributed architecture models
- Cooperative architecture models

#### Software Architecture

- Multi-tiered architecture approaches
- Middleware architecture
- Distributed software architecture

#### Network Architecture

- Topologies and components

#### Data Architecture

- Data Modeling
- Corporate Data Models
- Data Warehouse
- Physical storage architectures

#### Security Architecture

- Security architecture model
- Components of security architecture

#### Infrastructure Architecture

- Capacity
- Disaster recovery and business continuance
- Architecting for performance

## Unit 5: Architecture Best Practices

### Unit Objectives

#### End-to-End Requirements Tracing

#### System Architecture-Based Software Design

#### Data and Database Interoperability

#### Definition and Control of Interfaces

#### Decoupling

#### Separation of Purpose

#### Visible and Inspectable Design

#### Milestones Tied to Architecture Decomposition

#### Reuse Based on Quality Targets



## **Unit 6: The Bottom Line**

Ideas to use

Where to go for more information

*Please contact your ROI representative to discuss course tailoring!!!*