

MT001  
5 days

## Analysis and Design

*This course provides an in-depth review of Analysis and Design techniques. It addresses the topics of modern OO techniques versus techniques in use in legacy systems (DFD, Functional Analysis, amongst others) and shows how they complement one another. Students attending this course will emerge armed with a variety of techniques to address their analysis and design requirements and able to select the most appropriate for the task in hand. Core, common, topics such as Reuse and development within non-greenfield sites are thoroughly addressed, aimed at enabling students to work successfully in modern and legacy systems.*

### Course Objectives

- Explain the core Requirements capture techniques
- Define various types of lifecycle model and how to select them
- Emphasis the importance of reuse throughout Design.
- Explain Data-oriented, Function-Oriented and Object Oriented design methods
- Show how user-interface design is performed.
- Look at System Design and Modelling as a powerful design technique
- Contrast DFD, OO, Decision Tables, State tables, Petri Nets, ER design and other design techniques.
- Compare and contrast various types of distributed architectures
- Review Data-warehouse architecture and design
- Present the Implementation and Maintenance lifecycles and explain their issues and priorities

### Audience

- Management wanting to familiarize themselves with a suite of design technologies
- Technicians needing to address legacy as well as current systems
- Designers needing a full overview of available techniques

### Prerequisites

- Some knowledge of software development issues

### Timetable

Register at 09:00 for 09:30 start.  
Finish at 17:00.

### Presentation Style

Lectures, demonstrations, exercises and group discussions.

### Dates and Venues

Refer to *Course Schedules*.

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# Structured Analysis and Design

The course covers:

## Requirements Analysis

- Importance of Communication
- Identifying Requirements
- Requirements Management
- Data and Fact Gathering Techniques, Feasibility Studies
- Introduction to Prototyping
- Rapid Prototyping Tools, Benefits of prototyping
- Table-based requirements capture
- Decision tables for Business Rules

## System Development Life Cycle (SDLC)

- Linear or Waterfall Cycle
- Linear cycle phases : problem definition, system specification, system design, system development, testing, maintenance
- Problems with Linear Life Cycle
- Iterative Cycles
- Spiral model, RAD, XP

## User Interface

- Logical and Physical Design
- User interface design
- Interface design tools, User interface evaluations

## System Design & Modeling

- Introduction to Systems Design Environment
- Systems Development Approaches
- Function Oriented

## System Design & Modeling (contd).

- Data Oriented
- Object Oriented
- Development Process Methodologies
- Tools
- Modeling Methods
- Overview of CASE Tools**
- Computer Aided Software
- Engineering: Methodologies, Techniques and Tools
- Diagramming Tools, Report Generators, Information Repository, Code Generators

## System Design Techniques

- Document Flow Diagrams
- Data Flow Diagrams
- DFD notation
- Context diagram
- Process descriptions, Structured English, Decision Trees and Decision Tables
- Entity Relationship Diagrams
- Entities, Attributes, Relationships, Degree, Optionality, Resolving many to many relationships, Exclusive relationships.
- Structure Charts
- Modules, Parameter passing, Execution sequence, Structured Design

## Centralized & Distributed Systems

- Data Warehousing, data mining
- Evolution of Distributed Processing
- Client-server systems

## System Implementation, Maintenance and Documentation

- Maintenance Activities
- Documentation
- Document Configuration, Maintaining a Configuration
- Support Lifecycle

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