



**silicon
beach**
TRAINING

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Systems Design Techniques

Duration: 3 days
Price: £1,225 + vat

Prerequisites

There are no prerequisites for this course

ISEB Examination

This Systems Design Techniques course prepares participants to sit a one-hour, open book, examination leading to the certificate in Systems Design Techniques offered by the Information Systems Examinations Board (ISEB). This certificate is a practitioner specialism towards the ISEB Diploma in Solution Development.

The course is designed to be both practical and participative. Theoretical concepts are introduced and are then reinforced through practical exercises where participants can apply the skills and techniques of design in a realistic project simulation. The course takes a “tool-kit” approach to Systems Design, introducing models from the UML (such as sequence diagrams and state machine diagrams) alongside established models like the normalised data model and Structured English. It is appropriate to designers working in all software environments, including those primarily working on system enhancements.

Objectives

At the end of this course participants will be able to;

- Explain the role and objectives of systems design and implementation in the systems development lifecycle
- Define the objectives and constraints of design
- Design effective inputs, outputs and interfaces
- Normalise a restricted set of inputs and outputs
- Develop a “bottom-up” data model from normalised data
- Define logical process specification using Data Action Diagrams and Interaction Diagrams
- Produce a strategy for effective physical design
- Develop a state machine diagram
- Understand and apply the principles of security, confidentiality and privacy
- Describe the role of testing in systems design
- Describe and evaluate different methods of systems implementation
- Analyse training needs and select an appropriate training method
- Describe a range of post-implementation issues

Course Content

Introduction

- Objectives and constraints of design
- Design and implementation in the systems development life cycle
- The products of analysis
- Design approach and architecture



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Requirements Engineering: 3 days

Systems Development Essentials with Agile: 3 days

Modelling Business Processes: 2 days

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Input and output design

- The design boundary
- Output design and technology
- Input design and technology
- Selection of appropriate output and input technologies

Human-Interface Design

- Design of input and output screens
- Dialogue types
- Usability and style guides
- Dialogue modelling
- Prototyping the interface

Logical Data Design (normalisation)

- Notation and conventions of relational data analysis
- Principles of progressive normalisation
- Rationalising results
- Building the normalised (Third Normal Form) data model

Logical Process Design

- Class diagrams (UML)
- Interaction Diagrams (UML)
- Sequence Diagrams (UML)
- Communication Diagrams (UML)
- Structured English
- Data Action Diagrams

Systems Controls

- Risk in systems development
- Physical security
- Logical security
- State machine diagrams (UML)
- Backup and recovery procedures
- Software controls
- Audit trails
- Legal requirements of the designer
- Ethical issues affecting the designer



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Physical Design

- Optimising the physical design
- Principles of physical data design
- Design of codes and keys
- Principles of physical process design
- Common design patterns
- Interface and sub-system design
- Component diagrams (UML)
- Deployment diagrams (UML)
- Principles of re-factoring
- Principles of round-trip engineering

Testing

- Test cases from design models
- Design and code inspections
- Unit or component testing
- Component integration testing
- System testing
- System integration testing
- User acceptance testing
- Requirement traceability

Systems Implementation

- Implementation planning and preparation
- Changeover methods
- Handover procedures

Training

- Analysing training needs
- Methods of training delivery
- Evaluating training

Post-implementation

- Post implementation and post project reviews
- Benefits realisation
- Types of maintenance
- Change control
- Build and release strategy
- Regression testing
- Objectives and constraints of design re-visited



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