



## Designing and Developing Microsoft SharePoint Server 2010 Applications

### Course Description:

This five-day instructor-led course is intended for Microsoft SharePoint Development professionals who are responsible for leading projects, designing solutions, and identifying problems. In this course, students learn the skills and best practices that are required to help organizations design and develop effective SharePoint applications.

### Target Student:

This course is intended for IT professionals who will be responsible for designing custom code for projects that are deployed to SharePoint 2010 servers. To be successful in this course, the student will have at least two years of SharePoint development experience and should have experience with ASP.NET and Microsoft Visual Studio 2010.

**Number of Days:** 5

**Format:** Instructor-Led

**Class Code:** 10232

#### Recommended Course Sequence

Knowledge of prerequisites noted below.

*Course content is subject to change without notice.*

### Prerequisites:

This course requires students to meet the following prerequisites:

- Understanding of the problem-solving techniques that apply to the Software Development Life Cycle (SDLC), including the versioning of software and the management of configuration and content in a software system
- Basic knowledge of Web application architecture
- Experience in developing in a team environment
- Working knowledge of ASP.NET and Visual Studio
- Experience in SharePoint infrastructure including servers and services
- Experience in SharePoint development including the APIs and XML schemas necessary to create web parts, perform data access, and provision fields, lists, content types, etc.

### Delivery Method:

Instructor led, group-paced, classroom-delivery learning model with structured hands-on activities.

### At Course Completion:

After completing this course, students will be able to:

- Develop strategies for caching, session state, as well as design for high performance sites by limiting page size and iteration.
- Determine the most suitable presentation method, visual elements, programmatic objects and multilingual strategy which meets the design objectives.
- Evaluate available data access and storage methods and determine the appropriate implementation for the application requirements.
- Identify the pros and cons of various data capture options and specify the most effective method or combination of methods for capturing user input.
- Evaluate the use and implementation of SharePoint artifacts and determine which artifacts best meet the needs of the application requirements.

## Designing and Developing Microsoft SharePoint Server 2010 Applications

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- Design processing systems to get work done in the solution.
- Create an effective strategy for implementation and deployment of custom solutions in both development and production environments.
- Create a development strategy to allow multiple developers and administrators to work together.
- Devise a strategy for developing and deploying upgrades over time as the solution evolves.
- Develop an information architecture strategy that will support flexibility and growth and a navigation strategy that fits on top of this information architecture.
- Plan a comprehensive branding strategy and determine the necessary application elements required to support that strategy.
- Design and implement a security approach which supports both code access and end-user functionality.
- Design an effective strategy for optimizing page render times and data access methods within SharePoint 2010.
- Determine the appropriate use of unit and integration tests within SharePoint and design an effective strategy for ensuring maximum code reliability.

### Course Outline

#### Module 1: ASP.NET Advanced Concepts for SharePoint

This module helps you to review the essential information regarding ASP.NET including how to improve performance for high-scale sites like SharePoint. This module covers concepts around ViewState, caching, and session state and provides an opportunity to learn to make appropriate choices.

<b>Lessons</b>
<ul style="list-style-type: none"> <li>■ Server Memory</li> <li>■ Server CPU</li> <li>■ Transfer and Client</li> </ul>
<b>Lab : Page Size and ViewState</b>
<ul style="list-style-type: none"> <li>■ Using Fiddler to Observe Page Loading</li> <li>■ Using Fiddler to Examine Page Size</li> <li>■ Reducing Page Size</li> </ul>
<b>Lab : Memory and Performance</b>
<ul style="list-style-type: none"> <li>■ Starting a Performance Capture</li> <li>■ Reviewing the Report</li> <li>■ Resolving Memory Issues and Retest</li> </ul>
<b>After completing this module, students will be able to:</b>
<ul style="list-style-type: none"> <li>■ Review the fundamentals of memory management.</li> <li>■ Identify the key things to drive high CPU utilization.</li> <li>■ Identify factors impacting client performance.</li> </ul>

#### Module 2: Designing for User Experience

This module provides the key criteria and structure necessary to make appropriate decisions about what kind of user interface component to use based on the needs of the solution.

## Designing and Developing Microsoft SharePoint Server 2010 Applications

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<b>Lessons</b>
<ul style="list-style-type: none"> <li>■ SharePoint Background</li> <li>■ Page Parts</li> <li>■ Pages</li> <li>■ Globalization and Localization</li> <li>■ Designing for Accessibility</li> </ul>
<b>Lab : Selecting Page Parts</b>
<ul style="list-style-type: none"> <li>■ Line Dashboard</li> <li>■ Manager’s Dashboard</li> <li>■ Alert Notification</li> </ul>
<b>Lab : Selecting Page Types</b>
<ul style="list-style-type: none"> <li>■ Plant Summary Page</li> <li>■ Plant Configuration Page</li> <li>■ Employee List</li> <li>■ Line Status</li> </ul>
<b>After completing this module, students will be able to:</b>
<ul style="list-style-type: none"> <li>■ Review the fundamentals of SharePoint architecture and how it impacts the page design experience.</li> <li>■ Determine the appropriate page part in SharePoint for a given situation.</li> <li>■ Determine the appropriate page in SharePoint for a given situation.</li> <li>■ Identify the considerations for globalizing and localizing your applications.</li> <li>■ Determine the design impact of WCAG standards for projects requiring accessibility compliance</li> </ul>

### Module 3: Designing for Data

This module explains defining what storage will look like. This module discusses the information about data design critical to the performance and accessibility of the solution. The module also covers scalability issues related to data as well as the structural components such as the use of lists, list definitions, content types, and fields.

<b>Lessons</b>
<ul style="list-style-type: none"> <li>■ List and Library Fundamentals</li> <li>■ Large Data Strategies</li> <li>■ SharePoint Data Management</li> </ul>
<b>Lab : Time Tracking</b>
<ul style="list-style-type: none"> <li>■ Creating List Views</li> <li>■ Adding Indexes</li> </ul>
<b>Lab : Invoice Management</b>
<ul style="list-style-type: none"> <li>■ Creating an Invoice Content Type</li> <li>■ Enabling Content Organization</li> <li>■ Testing Content Organization</li> </ul>
<b>After completing this module, students will be able to:</b>
<ul style="list-style-type: none"> <li>■ Review the fundamentals of foundation for operating with data in SharePoint.</li> <li>■ Evaluate data size to arrive at potential solutions for large data storage</li> </ul>

## Designing and Developing Microsoft SharePoint Server 2010 Applications

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- needs.
- Manage data to arrive at an appropriate data access strategy.

### Module 4: Designing Data Capture and Integration

This module discusses strategies on how to get the data into the system. This module covers the techniques for capturing data – including office integration and integrating to other systems with BCS.

<b>Lessons</b>
<ul style="list-style-type: none"> <li>■ Key Considerations for Data Capture</li> <li>■ Designing for Data Capture</li> <li>■ Designing for Integration</li> </ul>
<b>Lab : Creating External Lists</b>
<ul style="list-style-type: none"> <li>■ Connecting to the Data Source</li> <li>■ Defining the External Content Types</li> <li>■ Defining the External Lists</li> <li>■ Setting Security for the Content Types</li> <li>■ Defining an Association</li> </ul>
<b>Lab : Creating an InfoPath Form</b>
<ul style="list-style-type: none"> <li>■ Creating the Calculations</li> <li>■ Publishing the Form to a SharePoint Library</li> </ul>
<b>After completing this module, students will be able to:</b>
<ul style="list-style-type: none"> <li>■ Identify the key considerations for data capture in SharePoint.</li> <li>■ Apply the appropriate approach to data capture in SharePoint.</li> <li>■ Identify the integration options and technologies that are built into the SharePoint platform including the Business Data Catalog (BDC) and Business Connectivity Services (BCS).</li> </ul>

### Module 5: Designing Artifacts

This module discusses items that will need to be implemented in SharePoint to tie the user interface and the data structure together. The module covers information about artifacts to begin the transformation of the abstract design into a specific set of deliverables that need to be created through SharePoint.

<b>Lessons</b>
<ul style="list-style-type: none"> <li>■ Customer Requirements</li> <li>■ Creating Sites</li> <li>■</li> </ul>
<b>Lab : Incident Response Site</b>
<ul style="list-style-type: none"> <li>■ Evaluating the Requirements</li> <li>■ Designing the Solution</li> </ul>
<b>Lab : Expense Reports</b>
<ul style="list-style-type: none"> <li>■ Evaluating the Requirements</li> <li>■ Designing the Solution</li> </ul>
<b>After completing this module, students will be able to:</b>
<ul style="list-style-type: none"> <li>■ Implement the techniques for evaluating and refining customer</li> </ul>

## Designing and Developing Microsoft SharePoint Server 2010 Applications

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- requirements.
- Determine an approach for matching customer requirements to SharePoint artifacts.

### Module 6: Designing Processing Solutions

This module covers the details of options for developing solutions. The module provides decision criteria for the determination of sandbox versus full trust (or a hybrid of the two) deployments. The module also provides details for making decisions about processing including how to address long running operations and how to decide the appropriate processing solutions.

<b>Lessons</b>
<ul style="list-style-type: none"> <li>■ Multiserver Configurations</li> <li>■ In and Out of the Sandbox</li> <li>■ Getting Work Done</li> <li>■ Working with Workflows</li> </ul>
<b>Lab : Designing an Engineering System</b>
<ul style="list-style-type: none"> <li>■ Evaluating Client Capabilities and Requirements</li> <li>■ Evaluating Sandbox Capabilities and Requirements</li> <li>■ Evaluating Farm Deployment Capabilities and Requirements</li> </ul>
<b>Lab : Creating a Sensor Report</b>
<ul style="list-style-type: none"> <li>■ Designing Data Access for Sensor Data</li> <li>■ Designing a Processing Solution for the Report</li> <li>■ Designing a Processing Solution for the Approval</li> </ul>
<b>After completing this module, students will be able to:</b>
<ul style="list-style-type: none"> <li>■ Explain the processing solutions and approaches that must be created when working in a multiserver environment.</li> <li>■ Identify the benefits and limitations of the SharePoint Sandbox features.</li> <li>■ Determine the choices available for in-page, client, event receiver, workflow, and timer execution models.</li> <li>■ Evaluate how SharePoint workflows are executed and the factors impacting design.</li> </ul>

### Module 7: Designing Packaging

This module addresses the first order problem of factoring the solution into features and packages so that it can be upgraded. This module covers the baseline skills of determining the number, scope, and dependency of features and determining the right number of packages.

<b>Lessons</b>
<ul style="list-style-type: none"> <li>■ Understanding Packaging Life Cycle</li> <li>■ Establishing Design Principles</li> </ul>
<b>Lab : Building a Business Document Solution</b>
<ul style="list-style-type: none"> <li>■ Designing a Solution</li> <li>■ Create the Final Solution</li> </ul>
<b>Lab : Working with Dependencies</b>

## Designing and Developing Microsoft SharePoint Server 2010 Applications

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<ul style="list-style-type: none"> <li>■ Creating a Common Assembly</li> <li>■ Creating a Dependent Solution</li> </ul>
<b>After completing this module, students will be able to:</b>
<ul style="list-style-type: none"> <li>■ Explain how packages are created and delivered.</li> <li>■ Determine the size of features to be able to effectively maintain the given solution.</li> <li>■ Determine the choices available for in-page, client, event receiver, workflow, and timer execution models.</li> <li>■ Evaluate how SharePoint workflows are executed and the factors impacting design</li> </ul>

### Module 8: Designing a Development Strategy

This module focuses on two key items necessary to deploy larger solutions, configuration and logging. This module provides the students a platform to expand the scope of the solution and focus on issues related to dozens of projects on a server, each with its own approach to configuration and logging.

<b>Lessons</b>
<ul style="list-style-type: none"> <li>■ Developing for the Enterprise</li> <li>■ The Role of Logging</li> <li>■ The Benefits of Application Configuration</li> </ul>
<b>Lab : Team-Based Logging and Configuration</b>
<ul style="list-style-type: none"> <li>■ Appraising the List-Based Configuration</li> <li>■ Using a SharePoint List-Based Configuration</li> <li>■ Using SharePoint List-Based Logging</li> <li>■ Configuring the Logging Level</li> </ul>
<b>Lab : Operational Logging</b>
<ul style="list-style-type: none"> <li>■ Adding Logging to SharePoint ULS</li> </ul>
<b>After completing this module, students will be able to:</b>
<ul style="list-style-type: none"> <li>■ Identify the team development needs for SharePoint.</li> <li>■ Explain operational and diagnostic logging including the differences and the options for recording.</li> <li>■ Determine the options for storing configuration in a SharePoint environment.</li> </ul>

### Module 9: Developing Version and Deployment

This module delves into the challenges of versioning in a SharePoint environment. The module also addresses deployment issues because most deployment issues are related to the versioning process.

<b>Lessons</b>
<ul style="list-style-type: none"> <li>■ Application Life Cycle Management</li> <li>■ Source Control and Build</li> <li>■ Versioning Strategy</li> <li>■ Upgrading</li> <li>■ Deployment</li> </ul>

## Designing and Developing Microsoft SharePoint Server 2010 Applications

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<b>Lab : Versioning Assemblies</b>
<ul style="list-style-type: none"> <li>■ Defining Base Version</li> <li>■ Upgrading the Assembly</li> </ul>
<b>Lab : Feature Upgrade</b>
<ul style="list-style-type: none"> <li>■ Creating Upgrade Manage Page</li> <li>■ Adding Feature to Upgrade</li> <li>■ Upgrading Feature</li> </ul>
<b>After completing this module, students will be able to:</b>
<ul style="list-style-type: none"> <li>■ Review the fundamentals of the software development life cycle and its relation to configuration management.</li> <li>■ Design a Source Control and build strategy.</li> <li>■ Determine the approach for versioning a given application.</li> <li>■ Address specific concerns for upgrading a given application that has been deployed to production.</li> <li>■ Assess the effectiveness of deployment strategy.</li> </ul>

### Module 10: Designing Information Architecture and Navigation

This module helps to draw the distinction between information architecture and branding topics. The module helps to separate taxonomy (organization) from navigation (user interface).

<b>Lessons</b>
<ul style="list-style-type: none"> <li>■ Understanding Information Architecture</li> <li>■ Planning for Software Boundaries</li> <li>■ Navigation</li> </ul>
<b>Lab : Developing a Site Structure</b>
<ul style="list-style-type: none"> <li>■ Using Card Sort</li> <li>■ Designing Content Types and Site Columns</li> </ul>
<b>Lab : Implementing Farm-wide Navigation</b>
<ul style="list-style-type: none"> <li>■ Deploying a Custom SiteMap</li> <li>■ Adding an ASPmenu to a Custom Master Page</li> </ul>
<b>After completing this module, students will be able to:</b>
<ul style="list-style-type: none"> <li>■ Determine the technique necessary to develop an information architecture based on SharePoint.</li> <li>■ Explain the scalability concerns for individual items in SharePoint in the context of information architecture.</li> <li>■ Determine the appropriate navigation solution for a given application.</li> <li>■ Assess the effectiveness of deployment strategy.</li> </ul>

### Module 11: Designing Branding and Customization Support

This module covers branding options, including what tools can be used to customize the appearance. The module moves us to including the users and power users of the ultimate solution.

<b>Lessons</b>
<ul style="list-style-type: none"> <li>■ Introduction to Branding</li> </ul>

## Designing and Developing Microsoft SharePoint Server 2010 Applications

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<ul style="list-style-type: none"> <li>■ Branding Options</li> <li>■ Branding Decisions</li> <li>■ Managing User Experience</li> <li>■ Planning for Customization</li> </ul>
<b>Lab : Packaging Branding</b>
<ul style="list-style-type: none"> <li>■ Importing .wsp Files Into Microsoft Visual Studio</li> <li>■ Extracting the File Resources</li> <li>■ Writing the Feature Receiver to Apply Changes</li> <li>■ Testing the Changes</li> </ul>
<b>Lab : Improving Brand Performance</b>
<ul style="list-style-type: none"> <li>■ Observing Current Performance</li> <li>■ Turning on BLOB Caching</li> <li>■ Observing BLOB Cached Performance</li> <li>■ Observing _layouts Performance</li> </ul>
<b>After completing this module, students will be able to:</b>
<ul style="list-style-type: none"> <li>■ Identify the need for branding and how it impacts the overall project.</li> <li>■ Enumerate the branding options and their various strengths and weaknesses.</li> <li>■ Identify the decisions to arrive at the best approach to branding.</li> <li>■ Design a user experience that includes branding.</li> <li>■ Create a strategy for managing customizations.</li> </ul>

### Module 12: Designing Security

This module describes how to design security for performance and provide a holistic view so to evaluate security implications and tradeoffs. This module also outlines the new Claims-Based authentication in SharePoint 2010 and how Forms-Based Authentication fits into this model.

<b>Lessons</b>
<ul style="list-style-type: none"> <li>■ Security Within SharePoint</li> <li>■ Using an Alternate Identity Store</li> <li>■ Forms-Based Authentication</li> <li>■ Deeper Look at SharePoint Claims</li> </ul>
<b>Lab : Setting Up a Customer Service Site</b>
<ul style="list-style-type: none"> <li>■ Setting Up the Authentication Provider</li> <li>■ Creating an FBA-Claims Site</li> <li>■ Optional Exercise: Viewing Claims for an FBA User</li> </ul>
<b>Lab : Solving a Security Issue</b>
<ul style="list-style-type: none"> <li>■ Understanding the Scope and Relating it to Configuration</li> <li>■ Designing a Security Strategy</li> </ul>
<b>After completing this module, students will be able to:</b>
<ul style="list-style-type: none"> <li>■ Explain the role of security in SharePoint.</li> <li>■ Evaluate the impact of alternate identity stores on a given security approach.</li> <li>■ Discuss the challenges and impact of Forms-Based authentication toward solving security concerns.</li> <li>■ Dissect SharePoint Claims implementations.</li> </ul>

## Designing and Developing Microsoft SharePoint Server 2010 Applications

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### Module 13: Designing for Page and Data Access Performance

This module discusses page and data access performance and how to plan for a high performance site.

<b>Lessons</b>
<ul style="list-style-type: none"> <li>■ Optimizing SharePoint Page Performance</li> <li>■ Analyzing Performance with the SharePoint Developer Dashboard</li> <li>■ Optimizing SharePoint Data Access Performance</li> </ul>
<b>Lab : Designing for Page and Data Access Performance</b>
<ul style="list-style-type: none"> <li>■ Using the SharePoint Server 2010 Developer Dashboard to Capture Performance Metrics</li> <li>■ Leveraging the SharePoint Server 2010 Search API for Large Data Queries</li> </ul>
<b>After completing this module, students will be able to:</b>
<ul style="list-style-type: none"> <li>■ Explain how SharePoint pages are built for optimized performance.</li> <li>■ Evaluate pages with performance issues in terms of elapsed time as well as database impact by using the SharePoint Developer Dashboard.</li> <li>■ Determine an appropriate SharePoint data access technique to deliver SharePoint data quickly and efficiently for a given scenario.</li> </ul>

### Module 14: Designing a Testing Strategy

This module discusses what we do at the end of the development process, testing. The module also covers functional testing and scale/performance testing.

<b>Lessons</b>
<ul style="list-style-type: none"> <li>■ Testing Concepts</li> <li>■ Unit Testing</li> <li>■ Integration Testing</li> <li>■ Performance Testing</li> </ul>
<b>Lab : Designing a Testing Strategy</b>
<ul style="list-style-type: none"> <li>■ Conducting Unit Testing</li> <li>■ Conducting Performance Testing</li> <li>■ Conducting Load Testing</li> </ul>
<b>After completing this module, students will be able to:</b>
<ul style="list-style-type: none"> <li>■ Evaluate the core testing concepts and their impact on quality.</li> <li>■ Evaluate the core concepts of unit testing.</li> <li>■ Evaluate the core concepts of integration testing.</li> <li>■ Test the performance of a given solution.</li> </ul>