

COMMON COURSE NUMBER: COP 2227C

COURSE TITLE: Solution Architectures

CREDIT HOURS: 3

CONTACT HOURS BREAKDOWN:

Lecture/Discussion 48

Lab 16

Other 00

Contact Hours/Week 4

CATALOG COURSE DESCRIPTION:

Prerequisite: CGS 1100

Corequisite: CIS 2321

This course provides students with the knowledge and skills necessary to analyze business requirements in a given scenario and then define technical solution architectures that will optimize business results by using Microsoft development tools.

General Education Requirements - Associate of Arts Degree, meets Area(s):
General Education Requirements - Associate in Science Degree, meets Area(s):

UNIT TITLES:

1. Defining Distributed Applications
2. Exploring a Sample Application
3. Microsoft Windows Operating System Fundamentals
4. Understanding the Design Steps
5. Implementing the Data Tier
6. Building the Components
7. Implementing the Business Tier
8. Implementing the Presentation Tier
9. Design Considerations
10. Overview of Designing Component Solutions
11. Conceptual Design

12. Logical Design
13. Integrated Design

I. Course Overview:

Upon successful completion of this course, the students should be able to build a simple distributed application, explain Microsoft's recommended architecture for enterprise applications, implement practical examples of the core elements needed to develop distributed applications, and reference additional sources of information and training.

II. Units:

Unit 1. Defining Distributed Applications

General Outcome:

- 1.0 The students should be able to discuss the evolution and use of distributed applications, using appropriate terminology.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 1.1 Discuss the various types of applications that are being created to.
- 1.2 Explain what distributed applications are and the advantages of using them.
- 1.3 Define key terminology and concepts relating to distributed applications.

Unit 2. Exploring a Sample Application

General Outcome:

2.0 The students should be able to describe Exploration Air applications and design documents.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

2.1 List the Exploration Air business needs and rules.

2.2 Explain the functionality of the Exploration Air application.

2.3 Explain the basic architecture of the Exploration Air application.

2.4 Describe how Exploration Air works with the Food Vendor application.

Unit 3. Microsoft Windows Operating System Fundamentals.

General Outcome:

3.0 The students should be able to explain the fundamentals of the Microsoft Windows operating system.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 3.1 List, and describe, the significant Windows operating system infrastructure services that support distributed solutions.
- 3.2 Explain the role of transactions in distributed computing and services provided by MTS.
- 3.3 Explain the features of IIS that support distributed applications.
- 3.4 Compare synchronous and asynchronous messaging, and explain how MSMQ bring asynchronous messaging to distributed computing.

Unit 4. Understanding the Design Steps

General Outcome:

4.0 The students should be able to analyze business requirements, explain the design steps, and define the application architecture and design solutions.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 4.1 Describe the application development process, including the steps to design, implement, and deploy a distributed application.
- 4.2 Determine business and customer goals, and analyze the business requirements for a distributed application.
- 4.3 Explain the difference between business logic and presentation logic.
- 4.4 Create a model of a distributed application using Visual Modeler.

Unit 5. Implementing the Data Tier

General Outcome:

5.0 The students should be able to describe the characteristics of data designs and access strategies.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 5.1 Define the characteristics of logical and physical data designs.
- 5.2 Create an entity-relationship diagram that describes data entities and the relationships between them.
- 5.3 Define a database schema that maps a logical design to a physical design.
- 5.4 Use the Visual Database Tools to view and create data structures.
- 5.5 Use the Visual Database Tools to design queries.
- 5.6 Explain the purpose of Universal Data Access
- 5.7 Describe how ActiveX Data Objects fit within the Universal Data Access model.

Unit 6. Building the Components

General Outcome:

6.0 The students should be able to discuss component building and use development tools.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

6.1 Define a component.

6.2 Explain how th COM supports components.

6.3 Describe the new features in the Visual Basic, Visual C++, Visual J++, and Visual FoxPro development systems.

6.4 Build a simple component using the development tool of your choice.

Unit 7. Implementing the Business Tier

General Outcome:

7.0 The students should be able to discuss business component design issues.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 7.1 Describe the differences between business and data components.
- 7.2 Discuss the main design points when creating MTS components.
- 7.3 Create a package in MTS Explorer and install components into the package.
- 7.4 Deploy an MTS package onto the server and client computers.

Unit 8. Implementing the Presentation Tier

General Outcome:

8.0 The students should be able to discuss presentation interfaces.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 8.1 Describe the purpose of the presentation interface.
- 8.2 Explain the pro and cons of deploying HTML user interfaces (UIs) versus DHTML UIs.
- 8.3 Explain the benefits of using ASP in the presentation tier.
- 8.4 Use Visual InterDev to create a Web-based UI.
- 8.5 List the options available to deploy applications.

Unit 9. Design Considerations

General Outcome:

9.0 The students should be able to analyze enterprise and distributed application and application performance.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 9.1 List and define the core requirements for distributed applications.
- 9.2 Define attributes of a distributed system and explain how they can be used to characterize these systems.
- 9.3 Describe the role of delays, resource contention, congestion, and application complexity in determining application performance.
- 9.4 Use Microsoft Performance Monitor and Visual Analyzer to evaluate application performance.
- 9.5 Summarize the parts of an enterprise application, and explain how to design one.
- 9.6 Identify additional training and developer resources.

Unit 10. Overview of Designing Component Solutions

General Outcome:

- 10.0 The students should be able to explain the risks involved in software design and show how to achieve good design with MSF.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 10.1 Explain the key challenges in today's business environment that necessitate changes to IT solution development approach.
- 10.2 Explain why they should spend time on design.
- 10.3 Identify typical problems that lead to design flaws and/or failure.
- 10.4 Explain how MSF addresses these problems.
- 10.5 List the top five ingredients for success in software design.
- 10.6 Describe Microsoft's process for designing solutions.
- 10.7 Explain how solution design relates to enterprise architecture.

Unit 11. Conceptual Design

General Outcome:

11.0 The students should be able to describe the process of conceptual design, create, and solve real world scenarios.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 11.1 Explain the purpose and value of conceptual design.
- 11.2 Apply the conceptual design process to a business solution.
- 11.3 Conduct shadowing interviews to gain user perspective.
- 11.4 Conduct other research and analysis to gain business perspective.
- 11.5 Synthesize business perspectives and user perspectives.
- 11.6 Construct scenarios consisting of narrative documents, context, physical environment, workflow/process, and task/sequence models.
- 11.7 Design the future work state.
- 11.8 Validate with users and refine.

Unit 12. Logical Design

General Outcome:

12.0 The students should be able to describe the process of logical design, perform logical design, explain the search for organization, and compare different approaches.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 12.1 Derive a logical design from a conceptual design.
- 12.2 Apply the logical design process to a business solution.
- 12.3 Distinguish between an object, service, and component.
- 12.4 Articulate the purpose of an interface contract.
- 12.5 Construct an interface contract.
- 12.6 Differentiate between the three service layers of the application model (User, Business, and Data) and explain the benefits of a three-tier approach.
- 12.7 Use paper prototypes and metaphors in designing user services.
- 12.8 Identify dependencies such as triggering events, coordination requirements, timing, and common business rules.

Unit 13. Integrated Design

General Outcome:

13.0 The students should be able to perform user interface design.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

13.1 Identify the three tracks of solutions design: User Interface, Business Process, and Database.

13.2 Describe the user interface design activities.

13.3 Explain the significance of metaphors.

13.4 Explain the value of prototypes.

13.5 Describe database design activities.

13.6 Explain how to synchronize and coordinate the three tracks.