Course Outline for DataSys+ (DS0-001) CertMaster Learn, Student Guide and CertMaster Labs

Course Outline	CertMaster Learn	Student Guide eBook	CertMaster Labs
Overview	Each of the bulleted activities below is a separate study task within the CertMaster Learn learning plan. Students are encouraged to complete a certain number of tasks in each login session based on their desired course completion date.	Review Activities are embedded within the eBook. Videos and Practice Questions are found in the CompTIA Learning Center, the platform through which the eBook is delivered.	Labs are available at the course level or integrated as study tasks within CertMaster Learn.
Lesson 1: Understanding Database Types and Structures			
Topic 1A: Identify Relational and Non-Relational Databases *Exam objectives covered:* *1.1 Compare and contrast database structure types.*	• Review Activity: Relational and Non-Relational Databases	• Review Activity: Relational and Non-Relational Databases	
Topic 1B: Understand Different Types of NoSQL Databases and Tools *Exam objectives covered:* *1.1 Compare and contrast database structure types.*	• Review Activity: Different Types of NoSQL Databases and Tools	• Review Activity: Different Types of NoSQL Databases and Tools	

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Topic 1C: Understand Relational Database Design *Exam objectives covered:* *2.1 Compare and contrast aspects of database planning and design.* *3.4 Given a scenario, implement data management tasks.*	• PBQ: Establish Relationships Using Keys • Video: Exploring Relational Databases • Review Activity: Relational Database Design	• Video: Exploring Relational Databases • Review Activity: Relational Database Design	• Assisted Lab: Exploring a Database Environment
Topic 1D: Identify Other Data Systems *Exam objectives covered:* *1.1 Compare and contrast database structure types.*	• Review Activity: Other Data Systems	• Review Activity: Other Data Systems	
	• Lesson 1: Practice Questions	• Lesson 1: Practice Questions	
Lesson 2: Recognizing Standards and Commands			
Topic 2A: Understand Standards and Principles *Exam objectives covered:* *1.2 Given a scenario, develop, modify, and run SQL code.*	• Review Activity: Standards and Principles	• Review Activity: Standards and Principles	
Topic 2B: Examine Operating Systems and Command Line Scripting	• Video: Comparing Scripting with Command Line and Powershell • Review Activity: Operating Systems	• Video: Comparing Scripting with Command Line and Powershell • Review Activity: Operating Systems	• Assisted Lab: Using Command Prompt and Powershell

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Exam objectives covered: *1.3 Compare and contrast scripting methods and scripting environments.*	and Command Line Scripting	and Command Line Scripting	
	• Lesson 2: Practice Questions	• Lesson 2: Practice Questions	
Lesson 3: Running Scripts for Data and Data Systems			
Topic 3A: Create and Alter Objects Using Data Definition Language *Exam objectives covered:* *1.2 Given a scenario, develop, modify, and run SQL code.* *3.4 Given a scenario, implement data management tasks.*	• PBQ: Use DDL to Alter and Delete Fields • Video: Creating Objects with DDL • Video: Altering Objects with DDL • Video: Creating Scripts from Other Objects • Review Activity: Data Definition Language	• Video: Creating Objects with DDL • Video: Altering Objects with DDL • Video: Creating Scripts from Other Objects • Review Activity: Data Definition Language	• Assisted Lab: Using Data Definition Language (DDL)
Topic 3B: Manipulate Data using Data Manipulation Language *Exam objectives covered:* *1.2 Given a scenario, develop, modify, and run SQL code.* *3.4 Given a scenario, implement data management tasks.*	• PBQ: Use DML to Create Joins • Video: Scripting with DML • Video: Data Sharing Best Practices • Review Activity: Data Manipulation Language	• Video: Scripting with DML • Video: Data Sharing Best Practices • Review Activity: Data Manipulation Language	• Assisted Lab: Using Data Manipulation Language (DML)
Topic 3C: Work with Transactions	• PBQ: Use Transactions to Update a Database	• Video: Using TCL to Commit and Roll Back Data	• Assisted Lab: Using Transaction Control Language (TCL)

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Exam objectives covered: *1.2 Given a scenario, develop, modify, and run SQL code.*	• Video: Using TCL to Commit and Roll Back Data • Review Activity: Transactions	• Review Activity: Transactions	• Applied Lab: Creating and Manipulating Databases and Data
Topic 3D: Perform Data Management Tasks *Exam objectives covered:* *3.4 Given a scenario, implement data management tasks.*	• Review Activity: Data Management Tasks	• Review Activity: Data Management Tasks	
	Lesson 3: Practice Questions	• Lesson 3: Practice Questions	
Lesson 4: Explaining the Impact of Programming on Database Operations			
Topic 4A: Work with Views *Exam objectives covered:* *1.2 Given a scenario, develop, modify, and run SQL code.* *3.4 Given a scenario, implement data management tasks.*	• PBQ: Create Views • Video: Creating Views • Review Activity: Views	• Video: Creating Views • Review Activity: Views	
Topic 4B: Understand Object Relational Mapping *Exam objectives covered:* *1.4 Explain the impact of programming on database operations.*	• Review Activity: Object Relational Mapping	• Review Activity: Object Relational Mapping	

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Topic 4C: Program with SQL *Exam objectives covered:* *1.2 Given a scenario, develop, modify, and run SQL code.* *2.2 Explain database implementation, testing, and deployment phases.*	• Video: Creating Stored Procedures to Query Databases • Review Activity: Program with SQL	• Video: Creating Stored Procedures to Query Databases • Review Activity: Program with SQL	• Assisted Lab: Using Stored Procedures and Triggers • Assisted Lab: Using GROUP BY to Group and Aggregate Data
Topic 4D: Write Functions *Exam objectives covered:* *1.2 Given a scenario, develop, modify, and run SQL code.*	• PBQ: Create Functions • Video: Using the TRIM Function • Video: Using the IIF Function • Review Activity: Functions	• Video: Using the TRIM Function • Video: Using the IIF Function • Review Activity: Functions	• Assisted Lab: Creating Views with Functions • Applied Lab: Creating Views and Building Functions
	• Lesson 4: Practice Questions	• Lesson 4: Practice Questions	
Lesson 5: Understanding Database Planning and Design			
Topic 5A: Understand Types of Architecture *Exam objectives covered:* *2.1 Compare and contrast aspects of database planning and design.*	• Review Activity: Types of Architecture	• Review Activity: Types of Architecture	
Topic 5B: Gather Data System Requirements *Exam objectives covered:*	• Video: Gathering Requirements for Data Systems • Review Activity: Data System Requirements	• Video: Gathering Requirements for Data Systems • Review Activity: Data System Requirements	

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2.1 Compare and contrast aspects of database planning and design.			
Topic 5C: Review Documentation Requirements *Exam objectives covered:* *2.1 Compare and contrast aspects of database planning and design.* *3.3 Given a scenario, produce documentation and use relevant tools.*	• Review Activity: Documentation Requirements	• Review Activity: Documentation Requirements	• Assisted Lab: Diagramming Databases
	• Lesson 5: Practice Questions	• Lesson 5: Practice Questions	
Lesson 6: Implementing, Testing, and Deploying Databases			
Topic 6A: Prepare for Deployment *Exam objectives covered:* *2.2 Explain database implementation, testing, and deployment phases.* *3.1 Explain the purpose of monitoring and reporting for database management and performance.*	• Video: Configuring a Database • Review Activity: Deployment	• Video: Configuring a Database • Review Activity: Deployment	• Assisted Lab: Installing and Configuring Database Connectivity

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Topic 6B: Conduct Testing and Other Quality Measures *Exam objectives covered:* *2.2 Explain database implementation, testing, and deployment phases.*	• Review Activity: Testing and Other Quality Measures	• Review Activity: Testing and Other Quality Measures	
Topic 6C: Understand Validation Techniques and Methods *Exam objectives covered:* *2.2 Explain database implementation, testing, and deployment phases.*	• PBQ: Perform Data Mapping • Review Activity: Validation Techniques and Methods	• Review Activity: Validation Techniques and Methods	• Assisted Lab: Validating Data
	• Lesson 6: Practice Questions	• Lesson 6: Practice Questions	
Lesson 7: Monitoring and Reporting on Database Performance			
Topic 7A: Consider Database Connectivity Needs *Exam objectives covered:* *1.3 Compare and contrast scripting methods and scripting environments.* *2.2 Explain database implementation, testing, and deployment phases.*	• Review Activity: Database Connectivity Needs	• Review Activity: Database Connectivity Needs	

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Topic 7B: Monitor the Database *Exam objectives covered:* *3.1 Explain the purpose of monitoring and reporting for database management and performance.*	• Video: Exploring SSMS Reports for Resource Utilization • Video: Monitoring Connections and Sessions • Review Activity: Monitor the Database	• Video: Exploring SSMS Reports for Resource Utilization • Video: Monitoring Connections and Sessions • Review Activity: Monitor the Database	• Assisted Lab: Monitoring Databases • Applied Lab: Configuring and Monitoring Databases
Topic 7C: Understand and Address Deadlocks *Exam objectives covered:* *3.1 Explain the purpose of monitoring and reporting for database management and performance.*	• Video: Identifying Locks • Review Activity: Deadlocks	• Video: Identifying Locks • Review Activity: Deadlocks	
	• Lesson 7: Practice Questions	• Lesson 7: Practice Questions	
Lesson 8: Understanding Common Data Maintenance Processes			
Topic 8A: Explain Patch Management *Exam objectives covered:* *3.2 Explain common database maintenance processes.*	• Review Activity: Patch Management	• Review Activity: Patch Management	
Topic 8B: Ensure Database Performance *Exam objectives covered:*	• PBQ: Analyze Queries to Increase Performance • PBQ: Create Indexes to Increase Performance	• Review Activity: Database Performance	• Assisted Lab: Optimizing Queries

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2.2 Explain database implementation, testing, and deployment phases. *3.2 Explain common database maintenance processes.*	• Review Activity: Database Performance		
Topic 8C: Ensure Database Integrity *Exam objectives covered:* *3.2 Explain common database maintenance processes.*	• Video: Investigating Database Corruption • Review Activity: Database Integrity	• Video: Database Integrity	• Assisted Lab: Ensuring Data Integrity with Constraints
	• Lesson 8: Practice Questions	• Lesson 8: Practice Questions	
Lesson 9: Understanding Governance and Regulatory Compliance			
Topic 9A: Understand the Importance of Protecting Data and Preventing Data Loss *Exam objectives covered:* *4.2 Explain the purpose of governance and regulatory compliance.*	• Review Activity: The Importance of Protecting Data and Preventing Data Loss	• Review Activity: The Importance of Protecting Data and Preventing Data Loss	
Topic 9B: Understand Data Retention Policies *Exam objectives covered:* *4.2 Explain the purpose of governance and regulatory compliance.*	• Review Activity: Data Retention Policies	• Review Activity: Data Retention Policies	

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Topic 9C: Classify Data *Exam objectives covered:* *4.2 Explain the purpose of governance and regulatory compliance.*	• Review Activity: Data Classification	• Review Activity: Data Classification	
Topic 9D: Consider Global Jurisdiction and Regional Regulations *Exam objectives covered:* *4.2 Explain the purpose of governance and regulatory compliance.*	• Video: Discussing the Complexities of Regulatory Compliance • Review Activity: Global Jurisdiction and Regional Regulations	• Video: Discussing the Complexities of Regulatory Compliance • Review Activity: Global Jurisdiction and Regional Regulations	
Topic 9E: Understand Third-Party Agreements and Release Approvals *Exam objectives covered:* *3.4 Given a scenario, implement data management tasks.*	• Review Activity: Third-Party Agreements and Release Approvals	• Review Activity: Third-Party Agreements and Release Approvals	
	• Lesson 9: Practice Questions	• Lesson 9: Practice Questions	
Lesson 10: Securing Data			
Topic 10A: Understand Data Encryption *Exam objectives covered:* *4.1 Explain data security concepts.*	• Review Activity: Data Encryption	• Review Activity: Data Encryption	
Topic 10B: Understand Data Masking	• PBQ: Use Anonymization to Mask Sensitive Data	• Video: Utilizing Anonymization and Pseudonymization Techniques	• Assisted Lab: Masking Data Using

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Exam objectives covered: *4.1 Explain data security concepts.*	• Video: Utilizing Anonymization and Pseudonymization Techniques • Review Activity: Data Masking	• Review Activity: Data Masking	Pseudonymization and Anonymization
Topic 10C : Describe Data Destruction Techniques *Exam objectives covered:* *4.1 Explain data security concepts.*	• Review Activity: Data Destruction Techniques	• Review Activity: Data Destruction Techniques	
Topic 10D: Audit Data Access *Exam objectives covered:* *3.2 Explain common database maintenance processes.* *4.1 Explain data security concepts.*	• Review Activity: Data Access Auditing	• Review Activity: Data Access Auditing	• Assisted Lab: Using Queries to Conduct Security Audits
Topic 10E: Audit Code and Changes *Exam objectives covered:* *3.2 Explain common database maintenance processes.* *4.1 Explain data security concepts.*	• Review Activity: Code Auditing and Change Management	• Review Activity: Code Auditing and Change Management	• Assisted Lab: Using Queries for Code Review and Code Auditing
	• Lesson 10: Practice Questions	• Lesson 10: Practice Questions	
Lesson 11: Securing Data Access			

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Topic 11A: Understand Identity and Access Management *Exam objectives covered:* *4.3 Given a scenario, implement policies and best practices related to authentication and authorization.*	• Review Activity: Identity and Access Management	• Review Activity: Identity and Access Management	
Topic 11B: Understand Access Controls *Exam objectives covered:* *4.3 Given a scenario, implement policies and best practices related to authentication and authorization.*	• Video: Access Controls • Review Activity: Access Controls	• Video: Access Controls • Review Activity: Access Controls	• Assisted Lab: Implementing Role-Based Access • Assisted Lab: Reducing Privileges for Users
Topic 11C: Understand Password Policies *Exam objectives covered:* *4.3 Given a scenario, implement policies and best practices related to authentication and authorization.*	• Video: Discussing Password Policy Standards • Review Activity: Password Policies	• Video: Discussing Password Policy Standards • Review Activity: Password Policies	
Topic 11D: Work with Service Accounts *Exam objectives covered:* *4.3 Given a scenario, implement policies and best practices related to authentication and authorization.*	• PBQ: Set Up a Service Account • Review Activity: Service Accounts	• Review Activity: Service Accounts	

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	• Lesson 11: Practice Questions	• Lesson 11: Practice Questions	
Lesson 12: Securing the Database and Server			
Topic 12A: Utilize Physical Security *Exam objectives covered:* *4.4 Explain the purpose of database infrastructure security.*	• Video: Physical Security Measures and Failures • Review Activity: Physical Security	• Video: Physical Security Measures and Failures • Review Activity: Physical Security	
Topic 12B: Utilize Logical Security *Exam objectives covered:* *2.2 Explain database implementation, testing, and deployment phases.* *4.4 Explain the purpose of database infrastructure security.*	• Review Activity: Logical Security	• Review Activity: Logical Security	
	• Lesson 12: Practice Questions	• Lesson 12: Practice Questions	
Lesson 13: Classifying Types of Attacks			
Topic 13A: Mitigate the SQL Injection Attack *Exam objectives covered:* *4.5 Describe types of attacks and their effects on data systems.*	• Video: Mitigating SQL Injection Attacks • Review Activity: The SQL Injection Attack	• Video: Mitigating SQL Injection Attacks • Review Activity: The SQL Injection Attack	• Assisted Lab: Rewriting Queries to Prevent SQL Injection

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Topic 13B: Mitigate the Denial of Service (DoS) Attack *Exam objectives covered:* *4.5 Describe types of attacks and their effects on data systems.*	• Review Activity: The Denial of Service (DoS) Attack	• Review Activity: The Denial of Service (DoS) Attack	
Topic 13C: Mitigate the On-Path Attack *Exam objectives covered:* *4.5 Describe types of attacks and their effects on data systems.*	• Review Activity: The On-Path Attack	• Review Activity: The On-Path Attack	
Topic 13D: Mitigate the Brute Force Attack *Exam objectives covered:* *4.5 Describe types of attacks and their effects on data systems.*	• Review Activity: The Brute Force Attack	• Review Activity: The Brute Force Attack	
Topic 13E: Mitigate Social Engineering Attacks *Exam objectives covered:* *4.5 Describe types of attacks and their effects on data systems.*	• PBQ: Recognize Social Engineering Attacks • Review Activity: Social Engineering Attacks	• Review Activity: Social Engineering Attacks	
Topic 13F: Mitigate Malware	• Review Activity: Malware	• Review Activity: Malware	

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Exam objectives covered: *4.5 Describe types of attacks and their effects on data systems.*			
	• Lesson 13: Practice Questions	• Lesson 13: Practice Questions	
Lesson 14: Planning for Disaster Recovery			
Topic 14A: Plan for Disaster Recovery *Exam objectives covered:* *3.1 Explain the purpose of monitoring and reporting for database management and performance.* *5.1 Explain the importance of disaster recovery and relevant techniques.*	• PBQ: Build a DR Plan • Video: Business Continuity and Disaster Recovery Planning • Review Activity: Disaster Recovery	• Video: Business Continuity and Disaster Recovery Planning • Review Activity: Disaster Recovery	
Topic 14B: Conduct DR Plan Testing *Exam objectives covered:* *5.1 Explain the importance of disaster recovery and relevant techniques.*	• Review Activity: DR Plan Testing	• Review Activity: DR Plan Testing	
Topic 14C: Transition/Failback to Normal Operations *Exam objectives covered:* *5.1 Explain the importance of disaster*	• Video: Disaster Recovery Plan Documentation • Review Activity: Transition/Failback to Normal Operations	• Video: Disaster Recovery Plan Documentation • Review Activity: Transition/Failback to Normal Operations	

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recovery and relevant techniques.			
	• Lesson 14: Practice Questions	• Lesson 14: Practice Questions	
Lesson 15: Implementing Backup and Restore Best Practices			
Topic 15A: Identify Types of Backups *Exam objectives covered:* *5.2 Explain backup and restore best practices and processes.*	• Review Activity: Types of Backups	• Review Activity: Types of Backups	
Topic 15B: Implement a Backup Strategy *Exam objectives covered:* *5.2 Explain backup and restore best practices and processes.*	• PBQ: Create a Backup Strategy • Video: Testing Backup Plans • Review Activity: A Backup Strategy	• Video: Testing Backup Plans • Review Activity: A Backup Strategy	• Assisted Lab: Backing Up and Restoring Databases with Backup Validation • Applied Lab: Creating Roles and Establishing a Backup Plan
Topic 15C: Store and Purge Backups *Exam objectives covered:* *5.2 Explain backup and restore best practices and processes.*	• Video: Backup Storage Considerations • Review Activity: Store and Purge Backups	• Video: Backup Storage Considerations • Review Activity: Store and Purge Backups	
	• Lesson 15: Practice Questions	• Lesson 15: Practice Questions	
	• Final Assessment	• Final Assessment	
Student Resources	• Strengths and Weaknesses Dashboard • Flashcards • Game Center	• Strengths and Weaknesses Dashboard • Mapping Course Content to CompTIA	

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	• Mapping Course Content to CompTIA DataSys+ DS0-001 (pdf)	DataSys+ DS0-001 (pdf)	
Instructor Resources	• Presentation Planner for DataSys+ DS0-001 (xlsx) • Onboarding Guide for Official CompTIA DataSys+ DS0-001 Content (pdf) • Mapping Course Content to CompTIA DataSys+ DS0-001 (pdf) • Instructor PowerPoint Presentations for DataSys+ DS0-001 (zip)	• Presentation Planner for DataSys+ DS0-001 (xlsx) • Onboarding Guide for Official CompTIA DataSys+ DS0-001 (pdf) • Mapping Course Content to CompTIA DataSys+ DS0-001 (pdf) • Instructor PowerPoint Presentations for DataSys+ DS0-001 (zip)	