Data Center Operations Specialist (DCOS)®

Course outline

Module 1: Introduction to Data Center Operations

Module 1: Introduction to Data Center Operations is an introductory course designed to provide Data Center Operations Specialists (DCOS)® with the foundational knowledge and skills needed to effectively manage and operate a data center. This module covers topics such as data center infrastructure, data center operations, and data center security. It also provides an overview of the DCOS® certification program and the roles and responsibilities of a DCOS®.

Lessons

- Overview of Data Center Operations
- Data Center Infrastructure Components
- Data Center Networking Basics
- Data Center Security and Compliance
- Data Center Power and Cooling
- Data Center Monitoring and Management
- Data Center Troubleshooting and Maintenance
- Data Center Automation and Virtualization
- Data Center Capacity Planning
- . Data Center Disaster Recovery and Business Continuity

After completing this module, students will be able to:

- Understand the fundamentals of data center operations, including the roles and responsibilities of a DCOS.
- Identify the components of a data center and their functions.
- Develop an understanding of the physical and logical components of a data center.
- Develop an understanding of the operational processes and procedures necessary to maintain a data center.

Module 2: Data Center Infrastructure and Design

Module 2 of the Data Center Operations Specialist (DCOS)® course provides an in-depth look at data center infrastructure and design. It covers topics such as power and cooling systems, physical security, cabling, and network design. It also provides an overview of the latest technologies and best practices for data center design and operations. This module is essential for anyone looking to become a DCOS and gain a comprehensive understanding of data center operations.

Lessons

- Overview of Data Center Infrastructure and Design
- Data Center Site Selection and Planning
- Data Center Power and Cooling Systems
- Data Center Network Design and Architecture
- Data Center Security and Compliance
- Data Center Monitoring and Management
- Data Center Capacity Planning and Optimization
- Data Center Automation and Orchestration
- Data Center Disaster Recovery and Business Continuity
- . Data Center Virtualization and Cloud Computing

After completing this module, students will be able to:

- Understand the fundamentals of data center infrastructure and design, including power, cooling, and cabling.
- Develop an understanding of the components of a data center, such as racks, servers, storage, and networking.
- Analyze the requirements for a data center and develop a design that meets those requirements.
- Implement best practices for data center design and operations, including security, redundancy, and scalability.

Module 3: Data Center Security and Compliance

Module 3 of the Data Center Operations Specialist (DCOS)® course covers the fundamentals of data center security and compliance. It provides an overview of the security and compliance requirements for data centers, including physical security, network security, and compliance with industry standards. It also covers the tools and techniques used to ensure data center security and compliance, such as firewalls, intrusion detection systems, and encryption. Finally, the module provides an introduction to the various compliance frameworks and standards that must be followed in order to ensure data center security and compliance.

Lessons

- Understanding Data Center Security Policies and Procedures
- Implementing Security Controls in the Data Center
- Data Center Access Control and Authentication
- Data Center Physical Security
- Data Center Network Security
- Data Center Firewall and Intrusion Detection
- Data Center Compliance and Auditing
- Data Center Disaster Recovery and Business Continuity Planning
- Data Center Security Monitoring and Incident Response
- . Data Center Security Best Practices

After completing this module, students will be able to:

- Understand the importance of data center security and compliance and the various security measures that can be implemented to protect data center assets.
- Implement best practices for data center security and compliance, including physical security, network security, and access control.
- Monitor and audit data center security and compliance to ensure that all security measures are being followed.
- Troubleshoot and resolve any security or compliance issues that arise in the data center.

Module 4: Data Center Networking and Connectivity

Module 4 of the Data Center Operations Specialist (DCOS)® course covers the fundamentals of data center networking and connectivity. It provides an overview of the different types of network architectures, protocols, and technologies used in data centers, as well as the best practices for designing and implementing a secure and reliable data center network. The module also covers topics such as network security, troubleshooting, and monitoring.

Lessons

- Overview of Data Center Networking and Connectivity
- Network Topologies and Protocols
- Network Security and Access Control
- Network Monitoring and Troubleshooting
- Network Virtualization and Automation
- Network Performance Optimization
- Network Design and Implementation
- Network Capacity Planning
- Network Troubleshooting and Maintenance
- . Network Disaster Recovery and Business Continuity Planning

After completing this module, students will be able to:

- Understand the fundamentals of data center networking and connectivity, including the different types of network architectures, protocols, and topologies.
- Identify and troubleshoot common data center networking and connectivity issues.
- Configure and manage data center network devices, such as routers, switches, and firewalls.
- Implement best practices for data center network security and performance.

Module 5: Data Center Storage and Backup

Module 5 of the Data Center Operations Specialist (DCOS)® course covers the fundamentals of data center storage and backup. It provides an overview of the different types of storage and backup solutions available, as well as best practices for implementing and managing them. It also covers topics such as data replication, disaster recovery, and data security.

Lessons

- Overview of Data Center Storage and Backup

- Types of Data Center Storage and Backup Solutions
- Data Center Storage and Backup Best Practices
- Data Center Storage and Backup Security
- Data Center Storage and Backup Capacity Planning
- Data Center Storage and Backup Performance Monitoring
- Data Center Storage and Backup Troubleshooting
- Data Center Storage and Backup Disaster Recovery
- Data Center Storage and Backup Automation
- . Data Center Storage and Backup Cost Optimization

After completing this module, students will be able to:

- Understand the different types of data center storage solutions and their associated benefits and drawbacks.
- Implement and manage data center storage solutions, including SANs, NAS, and object storage.
- Design and implement backup and disaster recovery strategies for data center storage solutions.
- Monitor and troubleshoot data center storage solutions to ensure optimal performance.

Module 6: Data Center Monitoring and Troubleshooting

Module 6 of the Data Center Operations Specialist (DCOS)® course provides an in-depth look at data center monitoring and troubleshooting. It covers topics such as monitoring tools, performance metrics, and troubleshooting techniques. Students will learn how to identify and resolve common data center issues, as well as how to use monitoring tools to ensure optimal performance. This module also covers best practices for data center maintenance and security.

Lessons

- Understanding Data Center Infrastructure
- Data Center Monitoring Tools and Techniques
- Troubleshooting Common Data Center Issues
- Data Center Security and Compliance
- Automating Data Center Operations
- Data Center Capacity Planning
- Data Center Performance Optimization
- Data Center Disaster Recovery and Business Continuity
- Data Center Virtualization and Cloud Computing
- . Data Center Networking and Connectivity

After completing this module, students will be able to:

- Understand the fundamentals of data center monitoring and troubleshooting.
- Identify and resolve common data center issues.
- Utilize best practices for data center monitoring and troubleshooting.
- Implement strategies for proactive data center maintenance.

Module 7: Data Center Automation and Orchestration

Module 7 of the Data Center Operations Specialist (DCOS)® course covers the fundamentals of data center automation and orchestration. It provides an overview of the various automation and orchestration tools available, and how they can be used to streamline data center operations. It also covers topics such as automation scripting, automation frameworks, and automation best practices. This module is designed to equip DCOS professionals with the knowledge and skills needed to effectively manage and automate data center operations.

Lessons

- Introduction to Data Center Automation and Orchestration
- Automation and Orchestration Tools and Technologies
- Automating Data Center Provisioning
- Automating Data Center Configuration Management
- Automating Data Center Monitoring and Reporting
- Automating Data Center Security
- Automating Data Center Maintenance and Troubleshooting
- Automating Data Center Capacity Planning
- Automating Data Center Disaster Recovery
- . Automating Data Center Compliance and Auditing

After completing this module, students will be able to:

- Understand the fundamentals of data center automation and orchestration.
- Develop and implement automation and orchestration strategies for data center operations.
- Utilize automation and orchestration tools to optimize data center operations.
- Monitor and troubleshoot data center automation and orchestration processes.

Module 8: Data Center Capacity Planning and Optimization

Module 8 of the Data Center Operations Specialist (DCOS)® course provides an in-depth look at data center capacity planning and optimization. It covers topics such as capacity planning principles, capacity planning tools, capacity optimization techniques, and capacity management best practices. This module also provides an overview of the different types of capacity planning models and how to use them to optimize data center operations.

Lessons

- Understanding Data Center Capacity Planning
- Capacity Planning Strategies
- Capacity Planning Tools
- Capacity Planning Best Practices
- Capacity Planning for Cloud Computing
- Capacity Planning for Virtualization
- Capacity Planning for Storage
- Capacity Planning for Networking
- Capacity Planning for Security

- . Capacity Planning for Disaster Recovery
- . Capacity Planning for Automation
- . Capacity Planning for Monitoring
- . Capacity Planning for Troubleshooting
- . Capacity Planning for Cost Optimization
- . Capacity Planning for Performance Optimization

After completing this module, students will be able to:

- Understand the principles of data center capacity planning and optimization.
- Develop strategies to optimize data center capacity.
- Analyze data center capacity utilization and identify areas for improvement.
- Implement best practices for data center capacity planning and optimization.

Module 9: Data Center Disaster Recovery and Business Continuity

Module 9 of the Data Center Operations Specialist (DCOS)® course covers the essential concepts of data center disaster recovery and business continuity. It provides an overview of the different types of disasters, the steps to take to prepare for them, and the strategies to use to ensure the continuity of operations. It also covers the different types of backup and recovery solutions, as well as the best practices for data center disaster recovery and business continuity.

Lessons

- Understanding Data Center Disaster Recovery Planning
- Developing a Business Continuity Plan
- Implementing Data Center Disaster Recovery Procedures
- Testing and Maintaining Data Center Disaster Recovery Plans
- Data Center Disaster Recovery Best Practices
- Data Center Disaster Recovery Strategies
- Data Center Disaster Recovery and Business Continuity Auditing
- Data Center Disaster Recovery and Business Continuity Risk Management
- Data Center Disaster Recovery and Business Continuity Cost Analysis
- . Data Center Disaster Recovery and Business Continuity Training and Education

After completing this module, students will be able to:

- Understand the principles of data center disaster recovery and business continuity planning.
- Develop a comprehensive data center disaster recovery and business continuity plan.
- Implement data center disaster recovery and business continuity procedures.
- Monitor and maintain data center disaster recovery and business continuity plans.

Module 10: Data Center Virtualization and Cloud Computing

Module 10 of the DCOS® course provides an in-depth look at data center virtualization and cloud computing. It covers topics such as virtualization technologies, cloud computing architectures, and cloud

service models. It also provides an overview of the benefits and challenges of virtualization and cloud computing, and how to effectively manage and monitor virtualized and cloud-based environments.

Lessons

- Overview of Data Center Virtualization
- Benefits of Data Center Virtualization
- Challenges of Data Center Virtualization
- Cloud Computing Basics
- Cloud Computing Services
- Cloud Computing Security
- Cloud Computing Deployment Strategies
- Data Center Automation and Orchestration
- Data Center Monitoring and Management
- . Data Center Capacity Planning
- . Data Center Disaster Recovery and Business Continuity
- . Data Center Migration Strategies
- . Data Center Optimization and Consolidation
- . Data Center Cost Reduction Strategies
- . Data Center Compliance and Regulatory Requirements

After completing this module, students will be able to:

- Understand the fundamentals of virtualization and cloud computing technologies and their application in data center operations.
- Identify the benefits and challenges of virtualization and cloud computing in data center operations.
- Implement virtualization and cloud computing solutions in a data center environment.
- Monitor and troubleshoot virtualization and cloud computing solutions in a data center environment.