**Course Overview and Schedule**

During this course, *IoT Data Analytics and Storage*, you will learn how to make the most of your live-stream and historical telemetry data produced by the IoT devices and sensors that support your business.

The first module begins with a general introduction to analytics and how it applies to Azure IoT. It next discusses concepts related to cold storage and how to set up Azure Data Lake for cold storage and analysis. Students begin working with an IoT scenario involving simulated wind farm data.

Module two picks up the wind farm scenario and uses it to illustrate concepts for warm storage. Students set up Azure Cosmos DB as an endpoint to receive data from Azure Stream Analytics jobs.

The third module examines the analytic capabilities of the Azure edge runtime. Students set up stream analytics, to run on a simulated edge device, and also examine how other Azure services – such as functions – can help process data on the edge.

In the final module, students take a deeper look at the stream analytics querying, routing and analysis capabilities. They work through labs that combine concepts from the first three modules and simulate changing device state, based on analytic information.

All of the information that you need in order to complete the course objectives is included in the course documents. The links to additional content that we've included are for those of you who are interested in digging deeper into the technologies.

**Students**

The target audience for this course is anyone interested in developing (or updating) data analytics skills for the IoT scenario. This course is well suited to existing data analysts who are new to IoT as well as people working in the IoT field who want to learn how to analyze their IoT data.

**Schedule**

*IoT Data Analytics and Storage* is a self-paced course that consists of four modules. All four of the modules are available when the course begins, and you can work your way through the modules at your own pace.

While each student will complete this course at a pace that suits their own requirements, we anticipate that an average student will be able to complete the lab assignments in about 10-15 hours. Please note that some of the labs are considerably longer than others due to the way that coding activities are distributed. You may find that the module 3 labs take longer to complete than the labs in the other modules.

**Module Structure**

This course is completely lab-based. There are no lectures or required reading sections. All of the learning content that you will need is embedded directly into the labs, right where and when you need it. Introductions to tools and technologies, references to additional content, video demonstrations, and code explanations are all built into the labs.

Some assessment questions will be presented during the labs. These questions will help you to prepare for the final assessment.

**Course Outline**

The *IoT Data Analytics and Storage* course includes four modules. Each of the four modules are described in the sections below.

**Module 1: IoT Analytics and Cold Storage**

* Lab 1: Configuring the Wind Farm Simulator
* Lab 2: Getting Started with Data Lake Storage and Analytics

**Module 2: Warm Storage**

* Lab 1: Getting Started with Warm Storage
* Lab 2: Implementing Business System Integration

**Module 3: Analytics on the Edge**

* Lab 1: Getting Started with IoT Edge
* Lab 2: Implementing Analytics on the Edge
* Lab 3: Deploying an Azure Function to the IoT Edge

**Module 4: Advanced Analytics**

* Lab 1: Constructing Analytics Queries
* Lab 2: Managing Analytics Topologies
* Lab 3: Device Management and Analytics

**Module Introduction - IoT Analytics and Cold Storage**

**Module Introduction - IoT Analytics and Cold Storage**

In this module, you will learn about

* Building an IoT architecture for analysis
* Building a fleet of virtual devices
* The role of cold storage in an IoT architecture

This module introduces you to the overall goals of building an IoT architecture. It then takes you through the process of setting up a fleet of virtual devices (wind farms) with the Azure Device Simulation Solution Accelerator. You then work with Azure Data Storage and Azure Data Lake Analytics to explore cold storage concepts and to perform big data analytics.

**Note**: Be sure to complete the lab configuration tasks at the end of Module 0.

During this module, you will complete the following hands-on labs:

* Lab 1: Configuring the Wind Farm Simulator
* Lab 2: L02-Getting Started with Data Lake Storage and Analytics