**Day 1**

1. Why Docker? Why Now?
2. Setup Docker for Your OS
3. Creating and Using Containers
   1. Check Our Docker Install and Config
   2. Starting a Nginx Web Server
   3. What Happens When We Run a Container
   4. Container VS. VM: It's Just a Process
   5. Assignment: Manage Multiple Containers
   6. Getting a Shell Inside Containers
4. Container Images, Where To Find Them and How To Build Them
   1. What's In an Image (and What Isn't)
   2. The Mighty Hub: Using Docker Hub Registry Images
   3. Images and Their Layers: Discover the Image Cache
   4. Image Tagging and Pushing to Docker Hub
   5. Building Images: The Dockerfile Basics
   6. Building Images: Running Docker Builds
   7. Building Images: Extending Official Images
5. Container Lifetime & Persistent Data
   1. Persistent Data: Data Volumes
   2. Persistent Data: Bind Mounting

**Day 2**

1. Kubernetes Introduction
2. Kubernetes Architecture
3. First Contact with Kubectl
   1. Kubectl Describe
   2. Exploring Resource Types
   3. Kubectl Get
   4. Kubectl Namespace Basics
4. Your First Deployment with Kubectl
   1. Kubectl Logs
   2. Deleting Pods and Watching The Effects
5. Sample Microservice App
   1. Quick Compose
   2. Kubernetes Image Registries
6. Walking Through App Deployments
   1. Creating
   2. Exposing
   3. Scaling Deployments
   4. Httping Testing
   5. Deploying a Distributed App
7. All About Kubernetes YAML
   1. YAML Creation Basics
   2. YAML From Scratch on Kubernetes
   3. YAML Tips and Validation
8. What is Replica-set?
9. What is Deployment?

**Day 3**

1. Service in K8S
   1. Nodeport
   2. ClusterIP
   3. LoadBalancer
   4. External
2. Rolling Updates and Failure Recovery
   1. Rolling Update Basics
   2. Rolling Update Walkthroughs
   3. Failed Update Details
   4. Recovering From Failed Updates
3. Volumes
   1. PV
   2. PVC
   3. Volume Mounting
4. Configmap and Secrets in K8S
   1. What is configmap?
   2. What is secret?
   3. How to create secret?
   4. How to connect to Azure Keyvault?
5. Deploy a sample Todo Web Application
   1. Create Volume
   2. Create Secret
   3. Deploy MySQL Pod
   4. Deploy Web App
6. Horizontal scaling of POD using Replicaset
7. Ingress
   1. What is ingress?
   2. Why we need it?
   3. Nginx Ingress controller
   4. Configure Ingress controller

**Day 4**

1. Overview
   1. What is Azure Databricks?
   2. Apache Spark-based analytics platform
   3. Apache Spark in Azure Databricks
   4. Fully managed Apache Spark clusters in the cloud
   5. Databricks Runtime
2. Quickstart: Run a Spark job on Azure Databricks using the Azure portal
   1. Create an Azure Databricks workspace
   2. Create a Spark cluster in Databricks
   3. Run a Spark f job
3. Introduction to Databricks and Apache Spark
   1. Introduction to databricks
   2. Write your first Apache Spark Code
   3. Apache Spark Architecture: How Apache Spark runs on a cluster
4. Introduction to Azure Data Lake
5. Create Azure Datalake
6. Mount Azure Datalake with Azure Databricks
7. The DataFrame API: Basics
   1. Create a DataFrame from a CSV file
   2. Configure options to read a CSV file
   3. How to select columns from a DataFrame
   4. How to reference columns of a DataFrame
   5. Understand the DataFrame Schema
   6. Specify a DataFrame Schema using a DDL-formatted string
   7. Spark Architecture: The Organization of a DataFrame
8. The DataFrame API: Transforming Data
   1. Adding columns to a DataFrame
   2. Renaming columns of a DataFrame
   3. Filtering rows from a DataFrame
   4. Joining multiple DataFrames: Part 1
   5. Joining multiple DataFrames: Part 2
   6. Aggregation: Count
   7. Aggregation: Count Distinct
   8. Aggregation: Get the Min value
   9. Aggregation: Get the Max value
   10. Aggregation: Average and Mean
   11. Aggregation: Grouping data
   12. Practice: Business Query
   13. Apache Spark Architecture: How Apache Spark Transforms data Internally
   14. User Defined Function

**Day 5**

1. Azure Databricks concepts
   1. Workspace
   2. Interface
   3. Data management
   4. Computation management
   5. Authentication and authorization
2. Databricks notebooks
   1. Create/update/delete the notebook
   2. Export and import notebook
3. Integrate Github with Databricks
4. Spark Jobs
5. View jobs
6. Create a job
7. View job details
8. Run a job
9. Schedule a job
10. Run a job immediately
11. Run a job with different parameters
12. View job run details
13. Building ML model in Databricks
    1. Data preprocessing
    2. Building the ML model
14. Deploying ML model using Databricks to Azure ML
    1. Register and manage the model
    2. Load versions of the registered model using the API
    3. Predict using the model
    4. Create a new model version

<https://tsmatz.github.io/azure-databricks-exercise/exercise10-mlflow.html>

1. Cost management in Data bricks while running Pipelines and ML models
   1. Azure Databricks Resources and Cost Structure
   2. Azure Databricks overall costs
   3. Azure Databricks Granular Cost Breakdown
   4. Managing costs through cluster policies
   5. Datalake costs