



Stony Brook
University

YOUR LEARNING PARTNER TO BRIDGE THE DIGITAL SKILLS GAP

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www.stonybrook.edu/cce/courses/index.php



BUILD A FUTURE-READY WORKFORCE

Stony Brook University is part of a global network of leading universities that have come together to help companies acquire tech talent and to reskill or upskill their workforce for high-growth careers in the digital economy. Powered by Trilogy Education, we've developed a series of full-time and part-time programs for a variety of roles in the workforce.

ALIGN **YOUR** WORKFORCE
WITH **YOUR** FUTURE:

Train top talent fast

Decrease onboarding time and costs

Boost employee performance and
productivity

Improve advancement opportunities,
engagement, and retention



OUR DIFFERENCE

High-impact learning experiences developed around your desired outcomes

Employer-Driven Curriculum

Modern workforce skills are aligned with your strategic goals to ensure that you influence a tailored learning experience comprised of lectures, discussions, lab work, and projects.

Job Readiness

Professional development focuses on soft skills such as empathy and active listening, how to communicate across teams and work with customers, as well as critical thinking and problem-solving.

Recruitment & Admissions

Proven digital marketing channels and tactics attract lifelong learners matched to your needs, while rigorous interviews and assessments identify individuals who will benefit most from your investment.

University Credentialed

Participants receive a certificate from Stony Brook University upon program completion.

70%

of IT decision-makers said their teams presently face a shortage of necessary skills.

Source: *Global Knowledge*





Top Instructional Talent

A highly-selective network of university-approved instructors complete extensive interviews, assessments, and training to connect, motivate, and support students in an immersive classroom environment.

Learner Analytics Platform

Proprietary insight into student mastery, instructor performance, and overall classroom sentiment creates quality, data-driven educational experiences that mitigate risks in near real-time.

Mentorship

Key personnel inside your organization are trained to be highly-effective mentors, guiding graduates through initial projects with specific learning outcomes and implementation deliverables.

Flexible Delivery

Programs are available full- or part-time with options for synchronous, in-person, online or blended formats.

ACCELERATOR

Develop a NEW pipeline of technical talent eager to contribute to your company and culture.

Secure a diverse workforce while reducing the time and expense to acquire new employees.

PATHWAYS

Reskill or upskill your technical teams to evolve into new roles by expanding their expertise on the latest technology.

Improve workforce engagement and provide career advancement opportunities.

ESSENTIALS

Increase the technical fluency of non-technical employees to match current and future business needs.

Drive cross-functional collaboration and increase employee retention.

CORPORATE TRAINING PROGRAMS



Full Stack Website Development



Software Engineering



BI & Data



Cybersecurity



Digital Marketing



Ask about our
other programs



“This is a great way to give your employees a non-traditional approach to develop their skills, build their personal development, and take their careers to the next level. These programs also serve as a great retention tool.”

Habib Sarkis, SVP and CTO,
CoreTech Infrastructure, GE Digital



“Our partnership is not just about the pursuit and creation of new talent, but we’re also looking forward to upgrading and sharpening the skills of some of our incumbent workforce in a more relevant and natural way. It’s just another way we can create a workforce of the future.”

Ricardo Madan, VP, Technology Products
& Services, TEKsystems Global Services

60%

of global executives expect that up to half of their organization's workforce will need retraining or replacing within five years.

Source: *McKinsey*





SAMPLE CURRICULA

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Introduction to Data - 12 hours

The introduction to Data workshop is appropriate for all business professionals. In this workshop participants will gain conceptual understanding and fluency of common data and statistical terms and techniques as well as a high-level understanding of data modeling including interpretation and creation of simple relational models. Our partners often use this workshop as a sorting mechanism to identify which participants have the aptitude and interest to progress deeper into analytical languages and tools.

SESSION 1: This session covers common statistics and analytical definitions with examples including mean, median, and mode, outliers, bias, questioning data, and other relevant terms and concepts. Additionally, participants are exposed to common data formats including delimited files, XML, JSON, relational, and document storage.

SESSION 2: In this session, participants will explore the difference between data and meta data as well as gain a deeper understanding of data models including common terms and concepts such as entities, attributes, and relationships. The session culminates with an examination of a simple relational model to put all of the terms in context.

SESSION 3: The third session lifts the cover on relational databases, which as the most common data storage format today. Participants learn about database concepts such as keys, null values, and a high-level overview of the normalization process (1st and 2nd normal form). The session culminates with an instructor-led interactive modeling session where we build a data model for a small business, discussing the pros and cons of various decisions.

SESSION 4: Building on session 3, the final session groups participants to work on practice exercises in modeling and bias detection. In the final 90 minutes, participants are given an individual assessment to complete which is evaluated.

SQL I - 12 hours

Now that participants have gained an understanding of relational structures and metadata concepts, they are ready to tackle querying relational data stores using the SQL language. The content strives for database vendor agnostic formats, relying on ANSI standard SQL as much as possible.

SESSION 1: This session introduces the SQL language with a brief background and history. Participants then are given an overview of the query tool, Azure Data Studio, and explore the sample data model used for the workshop which activates prior knowledge of relational model interpretation from Introduction to Data. Finally, the SELECT, FROM, and WHERE SQL keywords are interactively demonstrated to perform single table queries. Participants end the session with practice exercises to reinforce what was learned.

SESSION 2: Moving beyond single table queries, this session introduces participants to the concept of joins to denormalize the data. INNER and OUTER joins are demonstrated and utilized in interactive demonstrations. Participants end the session with practice exercises to reinforce what was learned.

SESSION 3: Joins are a key skill for any professional who wishes to query data. We begin session 3 with additional join practices and demonstrations. Following this, we introduce basic aggregate keywords that allow performing averages, sums, counts, mins, maxes, and distinct queries.

SESSION 4: This session culminates the learning experience with some tips and tricks for effectively building and troubleshooting your queries. The final assessment assigns a series of SQL queries to retrieve data from our sample database.



Python Data Engineering Tools - 12 hours

This workshop covers working with data using the NumPy and Pandas libraries and data visualization with matplotlib.

SESSION 1: This session starts with a quick review of Python data structures and then moves to exploring the NumPy library. NumPy is a Python package for scientific computing. Participants will learn to use NumPy for manipulating n-dimensional arrays and basic linear algebra.

SESSION 2: The second session focuses on the Pandas library. Pandas is a Python package that provides high-performance, easy to use data structures and data analysis tools for data scientists and data engineers. Participants learn to use Pandas for loading and saving data (using the Pandas DataFrame) and for processing data series.

SESSION 3: Session three covers data visualization using the Matplotlib package. Topics include scatter, line, bar, and pie plots and histograms. Advanced topics such as subplots, custom axes, colors, and images are also explored.

SESSION 4: The final assessment involves writing a Python program that opens a data file, reads the contents, and plots the data to a graph, which is displayed to the user.

Traditional ETL - 12 hours

Participants in this workshop will be introduced to ETL strategies for preparing data to be analyzed by data scientists. Participants will use these strategies and the skills learned in the first 3 workshops to build and execute ETL processes for flat file (log data, csv, etc) and relational data.

SESSION 1: This session introduces participants to the purpose of ETL in the data science pipeline and discusses overall strategy and design of ETL processes. Topics include choosing tools, determining where and how data integration should occur, handling changes in the structure of enterprise data over time, determining where and how to correct data, and scheduling data update frequency.

SESSION 2: Session two takes a close look at how to assess data sources, the design and format of output data stores, and mapping between the two.

SESSION 3: The third session covers the design and implementation of the code necessary to transform and move data from input sources to output data stores. Different techniques for data correction and cleaning are also discussed.

SESSION 4: The final assessment requires participants to design and implement a basic ETL process utilizing the techniques covered in the workshop.

Cloud ETL - 12 hours

Participants will apply the strategies and techniques learned in the previous workshops and apply them to cloud data sources such as non-relational databases, JSON and XML data from web services, and data from stream processors. This workshop also covers cloud provisioning, job encapsulation, and structuring ETL jobs with AWS SQS and Lambda.

SESSION 1: This session introduces participants to Cloud ETL, comparing and contrasting Cloud ETL with Traditional ETL. Topics include cloud data sources, tools, and architecture strategies.

SESSION 2: The second session looks at assessing cloud data sources such as non-relational databases, web services, and data from stream processors and mapping those sources to output data stores.

SESSION 3: Session three covers cloud provisioning, job encapsulation, and structuring ETL jobs with AWS SQS and Lambda.

SESSION 4: The final assessment requires participants to design and implement a basics ETL process using cloud-based input sources.

Modules

Excel Crash Course

Learn to do more with Microsoft Excel. In this module, we'll cover advanced topics like statistical modeling, forecasting and prediction, pivot tables, and VBA scripting. You'll even learn to model historic stock trends—and hopefully, learn to beat the market!

- Microsoft Excel
- VBA Script
- Statistics Modeling

Python Data Analytics

Gain a strong foothold in one of today's fundamental programming languages. In the course of this module, you'll gain deep proficiencies with core Python, data analytic tools like NumPy, Pandas, Matplotlib, and specific libraries for interacting with web data like Requests and BeautifulSoup.

- Python
- APIs
- JSON
- NumPy
- Pandas
- Matplotlib
- Beautiful Soup

Databases

Dive deep into the most prolific database languages: SQL and NoSQL. Work with PostgreSQL and MongoDB to organize data into well-structured and easily retrievable data formats. Work on a case study to combine data from different sources into one database.

- SQL
- NoSQL
- PostgreSQL
- MongoDB
- ETL process

Web Visualization

Building visualizations are of little benefit without a way to communicate the message. In this module, you'll be learning the core technologies of web development (HTML, CSS, and JavaScript) to create new, interactive data visualizations that you can share with everyone on the web.

- HTML
- CSS
- JavaScript
- AJAX
- D3
- Leaflet

Advanced Topics

By program's end, you'll be immersed in new and in-demand topics like Tableau, Hadoop, and Machine Learning.

- Tableau
- Hadoop
- Machine Learning

Final Project

Bring everything that you have learned in class altogether to create an impressive data-visualization application with a small team. Get creative and come up with something cool to show off to the whole world!

Dreaming up something fantastic and understanding the bounds of reasonable and achievable

The data engineering certificate series contains 5 workshops, each 12 hours in length. Workshops are divided into 3-hour increments and can be delivered in 2- and 4-day modalities. All workshops are synchronous, experiential, and guided by live facilitators. Each workshop culminates in a hands-on assessment to evaluate the competencies of the participants which is recorded and reported back to the sponsor organization.

The demand for developers with the ability to acquire, clean, organize, and analyze large data sets is increasing every year. Participants who complete this certificate program will be able to use the Python language and associated libraries to manipulate, clean, and perform basic analysis of large sets of data.

Thinking in Python - 12 hours

This workshop covers the installation, configuration, and use of Python development tools and introduces experienced developers (of any language) to the language features and best practices of Python development.

SESSION 1: This session introduces the Python programming language and ecosystem. Participants are shown the PyCharm integrated development environment (IDE) and explore the basics syntax and control structures of Python, console I/O, and random numbers. The session finishes up with participants creating programs that allow them to use the tools and explore the concepts presented.

SESSION 2: The second session picks up with functions, data structures, and file I/O. Participants learn how to read file data into Python data structures, manipulate the data, and then write the results back out to files. The session ends with participants creating programs that allow them to practice with the concepts presented.

SESSION 3: This session covers the object-oriented features of Python and shows participants how to package code into modules for reuse. Participants then spend time exploring these concepts by writing modules and programs.

SESSION 4: The final session covers error and exception handling and reviews material from the first three sessions. The final assessment has participants create a Python program that utilizes all of the Python features covered in the workshop.

Data Access with Python - 12 hours

This workshop shows participants how to access and process data from flat files, relational and non-relational databases, and REST web services.

SESSION 1: The first session of this workshop builds on the basic file I/O concepts covered in the Thinking in Python workshop. Participants learn how to read and manipulate files of arbitrary format (such as log files). This session also covers advanced processing of CSV, JSON, and XML flat files.

SESSION 2: This session covers using Python to access relational and non-relational databases. Topics include connection management, reading and processing data from these sources, and writing data back to the databases.

SESSION 3: The third session of this workshop covers consuming data from REST web services. Topics include creating and using connections and processing data returned from various web services.

SESSION 4: The final assessment involves writing code that consumes and processes data from flat files, relational and non-relational databases, and REST web services.

SQL II - 12 hours

Expanding on our knowledge of SQL, we take participants into more complicated query scenarios including aggregates, subqueries, case statements, date and time functions, and pivots.

SESSION 1: This session begins by activating prior knowledge of joins and where conditions by building several queries as a warm-up exercise. Following this, we discuss the concept of aggregation and grouping data sets with interactive practice and demonstrations of using GROUP BY and HAVING statements.

SESSION 2: Session 2 begins by participants eliminating duplicates using DISTINCT and limiting result sets using TOP. The CASE keyword is then demonstrated to alter selected data based on conditional criteria. Finally, we explore the concept of subqueries using the IN keyword within a WHERE clause context.

SESSION 3: Most relational database engines support various date and time functions. In this session, we explore how to split, segment, and manipulate date and time data. Finally, we explore the concept of pivoting data using the PIVOT keyword which brings an understanding of what BI tools are doing when they generate pivot reports.

SESSION 4: The final assessment assigns a series of SQL queries to retrieve data from our sample database.



Power Pivot I - 12 hours

Now that we understand how to query and interpret relational data structures, we will jump into a familiar business tool, Microsoft Excel, and explore the Power Pivot add-on which allows us to import data from multiple sources into custom models, expand on those models via relationships and calculated columns using DAX, and shaping data into pivot tables and charts.

SESSION 1: This session introduces the Power Pivot plugin to Excel. We begin by configuring and enabling power pivot, then familiarize ourselves with the interface by exploring an existing model. Finally, we will learn how to consume data from flat files and relational data stores.

SESSION 2: We begin session 2 with a recap of what we learned in the first session about importing data. Following this, participants tackle the first lab exercise that will have them import data from a variety of sources and build and customize a power pivot model. After completing the exercise, we explore creating calculations and manipulating text, date, and time data using DAX.

SESSION 3: Session 3 looks at how we can add time period evaluations into our reports and models by setting update tables and using built-in functions for analyzing values from different periods and performing semi-additive aggregations. We close the session by exploring how to add visualizations to our pivot tables and charts as well as using tools like slicers to quickly filter and explore our data.

SESSION 4: The final assessment centers on consuming data, building and enhancing a model, and creating a variety of tables and charts to visualize the data.

Modules

Introduction to Marketing Strategy

Students begin with an introduction to fundamental concepts of traditional marketing, before diving headfirst into strategy. Students will understand the breadth of the marketing lifecycle and how to take advantage of various touchpoints and optimize marketing metrics as well as gain exposure to the platforms and tools with which digital marketers reach their customers. This unit will also give students a context in which to understand and apply the tools and concepts they will learn throughout the course.

- Digital marketing in the marketing mix
- SEO essentials
- Brand strategy
- Campaign development
- Lead generation and conversion
- KPIs
- Native and content advertising

SEO Introduction

Students will learn how to rank keywords and what factors play into organic rankings: site quality, link backs, site audits, keyword research, page authority, etc.

- SEO fundamentals
- Content marketing
- Keyword research
- Technical SEO
- Onsite and offsite optimization

Landing Page Design and Optimization

Students will build landing pages utilizing SEO best practices and integrate website analytics (such as Google Analytics). This section will culminate in a series of exercises around the topic of microsite optimization and A/B testing.

- UI/UX basics
- Google Trends and Google Analytics
- Fundamental HTML and SEL
- A/B testing
- HTML, CSS, and SEO implications

Tech Crash Course

Students will learn the fundamentals of JavaScript and the major JavaScript frameworks/libraries (jQuery, React, and Angular) in order to perform a technical SEO audit on a variety of websites. This section will culminate in a practicum in which learners will work in pairs to perform audits of several sites and present their findings and recommendations.

- JavaScript
- Frameworks
- Technical SEO site audit practicum

SEO Capstone Project

Learners will work in groups to perform a comprehensive analysis of a website including competitive analysis, a technical website audit, and link back analysis. Teams will develop a content marketing plan and onsite and offsite optimization plans complete with a detailed report and presentation.

SEM Introduction

Students will study how to design keyword campaigns to drive traffic to their websites. They will be introduced to CPL, CPA and other ROI metrics, keyword optimization, tags, AdSense and Google display networks.

- Paid search fundamentals
- KPIs, planning, and strategy
- Keywords, conversion events, tags
- Spend, pacing, and ROI analysis
- Campaign development and management

Search Engine and Social Media Advertising

Students will focus on practical skills including calculating reach and earnings of various YouTubers, learning to implement ads on new digital platforms, and analyzing retargeted advertisements.

- Keyword capture
- Non-traditional search advertising
- Google and Bing ads
- Retargeting
- Targeting and crafting text ads

Search in Practice and Optimization Levers

Students will learn to leverage the power of machine learning along with digital marketing platforms and explore concepts such as auto-bidding and audience targeting to best position advertisements and achieve higher click rates.

- Ad creation
- AI/machine learning tools
- Audience targeting
- End-to-end search optimization automation

SEM Capstone Project

Students will work in teams to perform a comprehensive technical SEO audit and build a paid marketing strategy. Teams will analyze the true and simulated impact of their advertisement placements and optimization plans.

Metrics that Matter

Students will study more advanced tools and methods for tracking ROI and other KPIs. This module focuses on challenges like last click attribution and multivariate test complexities and strategies.

- Estimating, capturing, and tracking ROI
- Reporting and actionable recommendations
- Attribution modeling
- MVT
- Segmentation and insights

Analysis and Reporting Tools

Students will work with Excel and Tableau to create meaningful reports, concise dashboards, and compelling visualizations that speak to stakeholders.

- Databases and APIs
- Excel fundamentals
- Introductory Tableau
- Data aggregation and analysis

Final Capstone Project

Students will work in teams to create a complete digital marketing strategy (SEO and SEM) for a local or national non-profit. They will be tasked with developing campaign goals and KPIs, driving users towards an action (i.e., donate, volunteer, be aware), and generating sample reports and client presentations using the full suite of skills acquired in the course.

Modules

HTML/CSS

This module introduces the basics of “how the internet works” and the tools to bring web page design to life.

At the end of this module, students will be able to build a static web page to match provided design files.

Sample Tasks:

1. Match a provided design document
 - Semantic HTML
 - CSS Grid
 - Flexbox
 - Layout framework (1 of ...)
 - CSS fundamentals
 - Bootstrap

JavaScript

This module dives deep into JavaScript. Students will learn to build dynamic, interactive websites.

At the end of this module, students will be able to create websites that dynamically render data based on user interactions.

Sample Tasks:

1. Build an employee directory application with search and filter capabilities
2. Add a feature to an event management application
 - JavaScript variables
 - Data types
 - Loop
 - Conditionals
 - Events
 - Prototypes
 - Functions
 - Design patterns

Front-end Frameworks

This module covers the use-cases, organizational, and performance benefits of a front-end framework.

At the end of this module, students will be able to build and refactor applications in the selected framework in a scalable manner.

Sample Tasks:

1. Refactor a previous application using a front-end framework
2. Use the IEX API to build a stock tracking application
 - Foundations of a front-end framework (1 of ...)
 - React
 - Angular
 - jQuery
 - Vue
 - Data binding
 - Dynamic rendering
 - Code organization
 - HTTP requests

Project #1

Sample Tasks:

1. Student projects in response to an imagined client request

Servers/REST APIs

This module covers creating HTTP servers and implementing REST APIs to power full stack applications.

At the end of this module, students will be able to build a web application with a well architected back-end.

Sample Tasks:

1. Build a staffing application that matches employers with employees
- Foundations of a back-end framework (1 of ...)
 - Node/Express
 - Java/Spring Boot
 - PHP/Laravel
 - C#/ASP.NET
 - Python/Django
 - REST APIs
 - Middleware
 - Securing applications

Databases

This module covers basic queries, reading Entity Relationship Diagrams, and integrating a database into a REST API.

At the end of this module, students will be able to build a full stack application with persistent data stored in a database.

Sample Tasks:

1. Build a Task Management Application
 2. Refactor previous projects to include persistent data.
- Foundations of a database language (1 of ...)
 - SQL (Postgres)
 - Mongo
 - Schemas
 - Models
 - Query statements
 - API integration
 - Real-time databases

Advanced Topics

This module covers testing and introduces common data structures, algorithms, and async programming concepts.

At the end of this module, students will be able to use unit tests effectively and discuss data structures and algorithms at a high-level.

Sample Tasks:

1. Refactor previous class projects and homework
 2. Build a simple CRM
- Data structures
 - Async programming
 - Algorithms
 - Code organization
 - Testing

Project #2

Sample Tasks:

1. Student projects in response to an imagined client request

*Curricula subject to change based on local market demand and the input of corporate training partners.



Modules

Java Tools and Language Concepts

This module introduces the IntelliJ IDEA integrated development environment (IDE) and explores how simple Java programs are constructed. The learner's coding foundation is set with variables, loops, conditionals, and methods. This module also introduces the Maven build management tool.

- Create, debug, and compile Java terminal applications
- Write simple applications that utilize core Java types and syntax
- Use Maven to compile and run terminal applications
- Basic code push/pull with git

OOP Basics

This module covers object-oriented principles, interfaces, composition, and inheritance and how these concepts are used in modern development practices.

This module also demonstrates the use of object-oriented principles to separate code into cohesive classes that are primed for testing and re-use.

- Design Java classes
- Compare and contrast the use of interfaces, composition, and inheritance
- Instantiate and reference common Java Types

Data Structures, Collections, and Exceptions

Working with large sets of data is essential in all but the most trivial applications. This module covers how to effectively load, sort, and filter data using Java streams and lambdas.

- Understand the advantages and disadvantages of common collection structures such as Lists, Arrays, Stacks, and Queues
- Load data from the file system
- Use streams and lambdas to process data
- Capture and gracefully handle application errors without crashing your program

Spring Boot and REST

This module introduces Spring Boot and the Spring Framework. Students learn how to use these Spring components to build REST web services using the MVC pattern. REST API design and basic HTML, CSS, and JavaScript concepts are also covered.

- Build a REST web service with Spring Boot
- Use dependency injection in a Spring Boot application
- Design a simple REST API
- Exercise a REST API with Postman
- Connect an existing HTML/CSS UI to a REST API

Relational Data

This module covers basic relational modeling, basic SQL syntax, and the use of Spring JdbcTemplate and Spring Data JPA to interact with relational databases.

- Read and interpret ERDs
- Use SQL to insert, update, read, and delete relational data
- Use Spring JdbcTemplates to manipulate relational data
- Use Spring Data JPA to manipulate relational data

Agile Principles, TDD, and JUnit

This module covers using agile development principles to develop software applications. Students learn how to use Pivotal Tracker to create stories, estimate work using story points, and move stories from concept to completion.

Test driven development techniques and the JUnit framework are also covered.

- Understand SDLC and Agile concepts
- Use Pivotal Tracker for basic development tasks
- Estimate work using story points
- Use Junit to test code for correctness
- Use mocks and stubs in unit testing

Project 1

It's time to bring it all together and demonstrate what you've learned. The first project brings together all of your hard work and lets you show your competency at completing a real application using professional tools and techniques.

- Take a concept from specification to completion

12-Factor Apps, Cloud-Native, and Microservices

This module introduces the concepts of 12-Factor and cloud-native applications. Topics covered include microservices, externalizing configurations, and service registries.

- Explain the purpose of the 12-Factor App approach
- Describe the characteristics of a cloud-native Java application
- Compare and contrast microservices with monolithic web applications
- Create and use a configuration server
- Create and use a service registry

Queues, Edge Services, Caching, and PCFDev

This module continues the coverage of 12-Factor and cloud-native applications with the introduction of queues, edge services, caching services, and PCFDev.

- Use a queue for asynchronous request processing
- Compare and contrast ACID and eventual consistency
- Implement compensating operations
- Use a cache service in a cloud-native application
- Deploy services to PCFDev

Security, Reliability, and Monitoring

This module covers techniques for making cloud-native applications more secure, reliable and monitorable.

- Use Spring Security to security a cloud-native Java application
- Implement the circuit breaker pattern
- Instrument a cloud-native Java application

DevOps and CI/CD

This module introduces devops principles, build and deployment pipelines, and continuous integration/continuous deployment.

- Create a deployment pipeline
- Deploy a component to production with Jenkins
- Explain CI/CD

Final Project

It's time to bring it all together and demonstrate what you've learned. The capstone project brings together your hard work and lets you show your competency at completing a real application using professional tools and techniques.

- Convert a monolithic web application into a modern 12 factor app based on Spring Boot, microservices, and Cloud Foundry

Modules

Monolith Refactoring Strategies

This module introduces several strategies for moving monolithic applications to a cloud-native microservice based architecture.

- Seams
- Conway's Law
- Bounded Contexts
- Utilizing Test Driven Development
- Strangling the Monolith

Database Refactoring Strategies

This module introduces strategies for refactoring monolithic databases for use in cloud-native microservice. Concepts such as CAP theorem and eventual consistency are discussed.

- Refactoring Relational Databases
- Eventual Consistency
- CAP Theorem
- NoSQL Databases

Reporting and Monitoring

This module covers techniques, concepts, and frameworks used for reporting and monitoring cloud-native microservice based applications.

- Health Monitoring
- Reporting Instances
- Data Pumps
- Application Logging

Application Security

This module covers techniques and frameworks used for securing cloud-native microservice based applications. Topics include authentication, access control, and techniques for controlling application configuration.

- OAuth
- Bearer Tokens
- Role Based Access Control
- Repair, Repave, Rotate
- Configuration Servers

Configuration Management and CI/CD

This module covers configuration management, branching and release strategies, and devops pipeline concepts.

- Branching and Release Strategies
- DevOps Pipelines
- Code Quality Controls
- Sonar
- Artifactory

Capstone

The Capstone project requires learners to design, plan, and implement the transformation of a monolithic application to a cloud-native microservice based application.

- Design and Implement Capstone

