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CSCC Data Analytics Certification Program Capstone Project

Introduction

Welcome to the Nationwide IT and Columbus State Tech Trend Data Analytics Certification Program. This process document should be used, in reference to the Capstone Project all students will participate in, upon closing of the program.

Throughout the length of the program students will be learning the construct of how data and analytics work is being used throughout the industry. Here at Nationwide data and analytics are an emerging skill set, growing in our day-to-day jobs. In support of Nationwide’s Associate Readiness imperatives, the partnership with Columbus State was established to assist with re-skilling and up-skilling our current associates in this area of work.

Capstone Project Construct

**What is the Capstone project?**

The Capstone project provides students an opportunity to apply in-class learning giving Nationwide stakeholders an opportunity to see how the students perform and how well the curriculum addresses the needs of the Nationwide organization. The larger class will be broken down into smaller working groups (4 – 6 students each) that will deliver a data analytics-based problem statement, solution, and solution proposal.

**What can students expect from the Capstone project?**

The Capstone project will take place over the last three weeks of the overall program. Like all consulting assignments, it is the job of the working group to identify a data analytics-based problem statement, solution, and solution proposal. While it is reasonable to expect guidance from the appointed Data Analytics Working Group team members, it is the job of the team to determine how to achieve the final deliverables of the project. Columbus State instructors are there to assist the team in this process.

**What is required of the students?**

* Attendance and participation in class activities (the success of the Capstone project is reliant on the full participation of each member of the working group, attendance in weekly class sessions is critical)
* Timely completion of assignments
* Routine group discussions outside of the arranged class time
* The preparation and presentation of professional, high-quality report and final presentation to the Columbus State instructors, Data Analytics Working Group team, and select Nationwide stakeholders.

**How much time should be devoted to Capstone project work?**

The last three weeks of the program will be dedicated to your Capstone project work. Students are able to meet outside of class or during half day sessions on Thursday and Fridays during those three weeks that have been dedicated for this purpose.

Capstone Project Requirements and Guidelines

The **purpose** of the Capstone project is to provide students an opportunity to apply in-class learning to an overall data analytics problem statement and solution proposal. This will give Nationwide stakeholders an opportunity to see what’s been learned, how the students perform, and how well the curriculum addresses the needs of the Nationwide organization.

As part of the Capstone project:

* The class will be divided into smaller working groups (4 – 6 students each)
* Working Group team members will partner together to apply knowledge gathered throughout the curriculum, identifying a relevant, real-life data analytics-based problem statement as a part of a solution proposal
* It is the responsibility for each working group to lead its chosen Capstone project, using Columbus State instructor(s) and Data Analytics Working Group team members for support
* Students will meet for half-day sessions on Thursdays and Fridays the last three weeks of the Certification Program during normal work hours (working with management to be sure job responsibilities are covered while in Capstone)

Throughout the program students will want to begin brainstorming ideas around potential data analytics business problems for the basis of their Capstone projects. Groups may choose a problem statement along the lines of insurance, banking, credit card, financial structure, etc., but are not limited to these points. Ideas may stem from an on-going problem within the industry, something you have experienced in your day-to-day work at Nationwide or personal life, or something you’ve discovered within the time spent in class.

When creating and structuring the content for the Capstone project, use the following eight points listed below:

1. Business understanding – Written proposal: needs reviewed and approved
   1. Define a problem statement
   2. Why the analysis is needed?
   3. What is the gap the analysis is addressing?
   4. What is the one analytical question you want to solve through this project?
2. Data understanding
   1. What data is needed to solve the problem?
   2. What data is accessible?
   3. What is the ‘Nice-to-have’ data?
3. Data preparation
   1. Data cleansing
   2. What was the approach dealing with missing data, outliers, skewed data?
   3. Transformation
4. Exploratory data analysis
   1. Descriptive statistics
   2. Distribution of the data
   3. Data visualization
      1. Such as control charts, scatter plot, histogram
   4. Top 3-5 predictors from univariate analysis
5. Model development
   1. Split data/partition data (train and test) and define why these actions were taken.
   2. Why did you select that methodology?
   3. What has been considered and why?
6. Model evaluation/validation
   1. What metrics were used to assess the model performance?
   2. What can be done to improve the performance?
7. Implementation/deployment – Written proposal/model documentation
   1. How do they envision this model being run?
   2. Considerations for system integration: tools, file format, platform, system interactions
   3. Business utilization
      1. How does this model impact the business?
   4. Model interpretation
8. Creation of a data story
   1. Build a formal presentation, to practice storytelling, in support of the data analytics-based problem statement, solution, and solution proposal you have chosen

Capstone Project Timeframes and Final Presentations

The Capstone project portion of the program will take place the last three weeks of the Certification Program. The last three weeks of class will be open for the smaller working groups to come together, using the construct points above, to build out problem statements, discover solutions and build out a solution proposal to be presented to an audience of Nationwide working associates, as well as Nationwide stakeholders.

Students will meet for half day sessions on Thursdays and Fridays the last three weeks of the program. It is expected that all working group members participate and be active with the work involved for the Capstone.

The Columbus State instructors and the Data Analytics Working Group team members are available for questions, concerns, and help with your Capstone work. Feel free to reach out to any of the team members for brainstorming help, feedback on content, help with the Capstone construct, ideas for data set usage, and presentation tactics.

Data and Analytics Working Group

To compliment the Columbus State teaching staff, Nationwide established an active Working Group to be a point-of-contact for support and guidance throughout your time spent in the program. The team is made up of Nationwide associates that work in the Data and Analytics fields today across IT and the Business.

**Functions of the Working Group**

* Act as a Nationwide point-of-contact for questions and mentoring throughout the duration of the program
* Attend various classes to observe and be present for questions students may have assisting with relating in-class learning to “how it is being done today”
* Act as a sounding board to review proposed problem statements for Capstone project consideration and provide guidance with approach criteria, giving “okay” to move forward
* Consult with working groups to help steer thinking around problem statements being sure they are taking all things into consideration. *Note: Columbus State instructors will be there to assist with solutioning problem statements based on what’s been learned/discussed in class.*
* Be present for final presentation of the Capstone projects, along with Columbus State instructors and Nationwide stakeholders

Students may reach out to Working Group team members throughout the duration of the program for questions, support, or mentoring that may assist with in-class learning. The Data Analytics Working Group team members are:

* Jarrod Adams – Data Advisory Services, Enterprise Data Office
* Greg Hodge – Data Management, Enterprise Data Office
* Mark Marshalek – Data Management, Enterprise Data Office
* Krish Rajaram – Data Science, Enterprise Data Office
* Shannon Terry – Data Science, Customer Insights & Analytics
* Jim Tyo – Chief Data Officer, Enterprise Data Office
* Weiyan Zhao – Data Science, Customer Insights & Analytics