

## **DATA AND ANALYTICS LEARNING PROGRAM FOR NATIONWIDE**

### **RESULTS OF COMPRESSION PLANNING® SESSION HELD AUGUST 18, 2017**

#### ***Initial Compression Planning Design***

#### **OVERALL PURPOSE**

To define curriculum content and structure for a Data and Analytics incumbent learning program at Nationwide

#### **BACKGROUND**

1. We must ensure educational programs are designed to align with the employer needs.
2. Columbus State personnel will only seek to clarify employer input for the purpose of creating accurate content. The outcomes of this session is an analysis of the competency requirements—this document will be used by Columbus State faculty members to create a high impact program.
3. There are two major components of our work today:
  - a. Conduct an adapted job skills analysis by describing the competencies needed to result from the identified content areas — data analytics, software development/dev hack, and statistics.
  - b. Determine targeted performance outcomes (TPOs) that result from the learning program
4. We seek the essential skills needed to result from this learning program that will lead to multiple roles at the organization including those involving data modeling, data analysis and data visualization. The focus is not on fringe activities such as serving on continuous improvement committees.
5. Target is 75% virtual, 25% in person. Potentially three stackable learning modules culminating in 2-5 weeks of project-based learning with experienced mentors as part of capstone, resulting in IT credential from Columbus State.
6. Participants are IT professionals with legacy skills in need of upskilling and reskilling for emerging departments at the organization.

#### **PURPOSES OF THIS SESSION**

1. To conduct an adapted job analysis for the identified content areas:
  - a. To determine 3—5 desired specific skills needed to be developed in Data Analytics
  - b. To determine 3—5 desired specific skills needed to be developed in Math/Stats
  - c. To determine 3—5 desired specific skills needed to be developed in Software Development/Dev Hack
2. To identify any additional skills that need developed in the proposed capstone course
3. To determine targeted performance outcomes (TPOs) of the learning program
4. To debrief the session.

#### **NONPURPOSES OF THIS SESSION**

1. To complete the final version of the curriculum today
2. To be concerned about rank and seniority when making comments
3. To get off track
4. To make long comments
5. To have side bar conversations
6. To check electronic devices while we are in session

## OUTCOMES OF THE AUGUST 18, 2017 PLANNING SESSION

### Content Area 1: Data Analytics

1. Cross Industry Standard Process for Data Mining (CRISP-DM)
  - a. Business Understanding
  - b. Data Understanding
  - c. Data Preparation
  - d. Modeling
  - e. Evaluation
  - f. Deployment
2. Basic profiling skills and ability to gather data.
3. Basic data preparation and blending.
4. Prepare data with appropriate process/best practice for study being performed. Understand perspective of analysis.
5. Think critically and logically to solve problems.
6. Awareness of how to use data to solve the problem within study design.
7. Understand data structure and what question is being asked of the data.
8. Summarize data (stats and review).
9. Ability to use tools that are constantly changing, currently includes scripting, notebook, and r (increasing), sps, python, and SAS (decreasing).
10. Natural language and text analytics skills.



### Content Area 2: Math/Stats

1. Fundamental stats including principles and techniques.
2. Distribution and probability.
3. Basic concepts of linear algebra (matrix, vector, linear functions)
4. Basic linear regression and logistic regression.
5. Interpreting statistics, rather than algorithm understanding.
6. T-Test, Chi Square, Analysis of Variance (ANOVA).
7. Understand decision tree concept, apart from tool used.
8. Reproducibility.

### Content Area 3: Software Development/Dev Hack

1. Foundational Computer Science.
2. Fluency with operating systems.
3. Iterative extreme programming.
4. Test automation, dev ops.
5. Software development life cycle (SDLC), Test Driven Development (TDD), and Behavior-Driven Development (BDD).
6. Understanding of Development versus Deployment.
7. Automation and scripting across end-to-end to build data pipelines.
8. Holistic approach to understanding the process.
9. Proficiency in SQL (potentially up to expertise).
10. Prototyping skills.
11. Knowledge of APIs, and service for integration, including Cloud integration.
12. Deployment architecture.
13. Data acquisition that is tool agnostic.

### **Additional Skills/Attributes that need to be developed**

1. Storytelling
2. Curiosity
3. Critical Thinking
4. Problem Solving
5. Consulting Ability
6. Continuous Learning

### **Targeted Performance Outcomes (TPOs) of the learning program**

- Associates complete the program with understanding of end-to-end generation of a data product.
- Associates have contextualized information on how to get data back to where it belongs.
- Associates complete foundational core (all paths) then move into one of three learning modules, additional specialized training after learning module provided by Nationwide for associates to move into multiple roles. This concept will be flushed out after completing planning for the other paths (Cybersecurity and Development).

### **Parking Lot/Additional Concepts to Explore**

- Pre-assessment and post-assessment that informs path selection on the front end and potential role on the back end.
- Need to determine prerequisite or test for knowledge of statistics.
- Stats proficiency can be a role differentiator. (Associates lacking in stats, may be better fit for another role.)
- The learning module program may potentially include remediation for math.
- Nationwide will create a process for continued associate support beyond learning modules, including assistance with their next career steps.
- The program has the potential to produce associates both in IT, and outside of IT in other business functions.
- Explore potential milestone intervention points in the learning module program where associates can change tracks.