

# Connecticut Digital Talent Ecosystem Initiative

The New England Board of Higher Education and the Business Higher Education Forum



The Connecticut Digital Talent Ecosystem Initiative, a partnership between the New England Board of Higher Education (NEBHE) and the Business Higher Education Forum (BHEF), aims to create a six-credit Digital Generalist microcredential, offered by Connecticut's postsecondary institutions. The Digital Generalist microcredential will connect students with high value education pathways and prepare them for in-demand, technology-enabled occupations across critical industries, including manufacturing, healthcare and finance.

## WHAT IS THE DIGITAL GENERALIST MICROCREDENTIAL?

The Digital Generalist microcredential is a bundle of curricula and/or courses (totaling six credits) that, together, fulfill six buckets of Knowledge, Skills and Abilities (KSAs) and learning outcomes (see below).

## ROLE OF EMPLOYERS

- ✓ Verify KSAs as in-demand needs for Digital Generalist talent
- ✓ Partner with postsecondary institutions in Connecticut that offer the Digital Generalist microcredential to offer programmatic enhancements, such as work-based learning opportunities
- ✓ Hire individuals who complete the microcredential

## ROLE OF INSTITUTIONS

- ✓ Determine courses that align to employer-approved KSAs and bundle into the credit-bearing Digital Generalist microcredential
- ✓ Partner with employers seeking job candidates with a Digital Generalist credential to iterate the Digital Generalist microcredential and develop stackable education pathways to Specialist credentials and degrees
- ✓ Create career pipelines for students to connect with employers with high-wage, high-demand job openings

## TIMELINE

Phase	Timeline
0 – Lay Foundation	✓
I – Analyze Job Market Landscape & In-demand Skills	✓
II- Profile Competencies & Skills	✓
III – Map skills & Curricular Gaps	February 2021
IV – Select Academic Credentials	March 2021
V – Implementation	May 2021
VI – Integrate High Impact Practices	Summer 2021
VII – Develop Industry-Engaged Programs	Fall 2021 & Beyond
VIII – Update Continuously	Fall 2021 & Beyond
IX – Change Talent Development & Recruitment	Fall 2021 & Beyond

# EMPLOYER-APPROVED DIGITAL GENERALIST CREDENTIAL: KSAS AND LEARNING OUTCOMES

## 1. The Role of Data and Analytics

- a. Explain the importance of data and what data represent - *knowledge*
- b. Differentiate common data typologies, including structured vs. unstructured, numeric vs. text, root vs. derived - *knowledge*
- c. Explain the performance implications of differing data modeling methods and structures - *knowledge*
- d. Explain potential uses/applications given a source and type of data - *knowledge*
- e. Demonstrate how data can be used to reduce uncertainty and risk related to decisions and decision-making - *knowledge*
- f. Explain and demonstrate how differences in data and desired outcomes impact the appropriateness of data analysis techniques (e.g., descriptive vs. diagnostic vs. predictive vs. statistical) - *knowledge*

## 2. Probability and Descriptive and Inferential Statistics

- a. Demonstrate knowledge of probability and standard statistical distributions-*knowledge*
- b. Explain hypothesis testing and statistical significance - *knowledge*
- c. Demonstrate and explain the role and importance of model validation and accuracy metrics in analytics projects, hypothesis testing, and information retrieval - *knowledge*
- d. Describe the conditions that comprise the simple linear regression model and associated concepts including the least squares criterion - *knowledge*
- e. Demonstrate the ability to form hypotheses and appropriate experimental design to test - *skill*

## 3. Data Manipulation

- a. Perform basic data manipulation and exploration using appropriate tools and software, including use of key Excel functions - *skill*
- b. Create and edit simple data structures and storage - *skill*
- c. Detect and remediate missing, miscoded, and anomalous data - *skill*
- d. Explain the purpose of and code conditional logic statements - *skill*
- e. Use a computer application to manage large amounts of information - *skill*
- f. Implement common information retrieval and filtering applications in databases and data systems - *skill*
- g. Find and access publicly available datasets - *skill*
- h. Conduct ad hoc analysis (summarize, estimate, predict data, use pivot tables) - *skill*

## 4. Data Visualization and Communication

- a. Explain the role of data visualization in discovery, communication, and decision-making - *knowledge*
- b. Evaluate data visualization options for proper application in various situations - *ability*
- c. Create effective static and interactive data visualizations or narratives that employ analytics and visualization software and strategies for various audiences - *skill*
- d. Visualize data using various types of displays including tables, dashboards, graphs, maps, and trees - *skill*

- e. Distinguish between advanced visualizations and explain the advantages of each - *knowledge*
- f. Discuss techniques for creating advanced data visualizations - *knowledge*
- g. Apply the principles of color, composition, and hierarchy to design - *skill*
- h. Properly define a problem in context, use appropriate data, and deliver a compelling visualization to explain or answer a question - *ability*
- i. Utilize effective storytelling methods (e.g. metaphor, analogy, journeys) to provide data insight beyond data reporting - *ability*
- j. Evaluate interactive design techniques and content strategy for digital services (UX) - *ability*
- k. Identify the current and potential impacts of new, emerging, and rapidly evolving technologies on organizations and their operations across a range of industries and sectors - *knowledge*
- l. Apply data mining techniques to structured and unstructured data - *skill*

## 5. Data Ethics

- a. Identify how global legal, policy and/or ethical constraints might impact data analyses - *knowledge*
- b. Identify the established ethical and legal issues in data management facing organizations - *knowledge*
- c. Explain how ethical, compliance, and legal issues should/must be considered in data driven decision making - *knowledge*
- d. Demonstrate awareness of personal privacy issues related to the collection and usage of data - *knowledge*
- e. Explain the important issues around data governance - *knowledge*
- f. Recognize and explain the potential sources of bias in data or analysis and its effect on outcomes and decisions - *knowledge*

## 6. Data Security

- a. Explain information assurance (IA) principles and organizational requirements that are relevant to confidentiality, integrity, availability, authentication, and non-repudiation - *knowledge*
- b. Apply confidentiality, integrity, and availability principles - *skill*
- c. Explain data classification standards and methodologies based on sensitivity and other risk factors as they relate to relevant regulatory requirements - *knowledge*
- d. Explain authorization and access control principles and methods - *knowledge*
- e. Describe the fundamental concepts of Risk Management and Risk Management Life Cycle - *knowledge*
- f. Explain rationale for data anonymization and data security standards - *knowledge*
- g. Identify situations vulnerable to insider threats - *knowledge*
- h. Explain various methods to prevent insider threats - *knowledge*
- i. Describe the spectrum of insider threats and its implications - *knowledge*