

Industry-Contextualized Gateway Math

Professional Development for Math and CTE Faculty

North Carolina Postsecondary Perkins CTE Leadership Project

Academic Year 2025–2026

Overview

The Industry-Contextualized Gateway Math project paired North Carolina community college mathematics and CTE faculty with local employer partners to develop and teach math lessons grounded in authentic workplace tasks. Funded by as a NCCCS Perkins CTE Leadership Project and led by Jay Martin and Ann-Claire Anderson (CORD), the project involved six faculty pairs and six employer partners who created lessons aligned with NCCCS Gateway-level mathematics courses that serve as general-education requirements or prerequisites across many CTE programs of study.

- MAT 110 – Mathematical Measurement and Literacy
- MAT 143 – Quantitative Literacy
- MAT 152 – Statistical Methods I
- MAT 171 – Precalculus Algebra

Deliverables

- Launch video that presents a company overview, an employee success story, and the real-world scenario with details students need to understand about the context.
- Amplify (formerly Desmos) interactive activity that covers prerequisite math skills through the free Amplify online tool to prepare students for the contextual assignment.
- Student sheet and solutions present tasks authentic to the industry, plus thought, discussion, and critical-thinking questions.
- Teacher notes provide practical guidance written after field testing so other teachers can adopt the lesson.
- Statewide “Career Conversations” live webinars (April 20–21, 2026) connecting employer panelists with community college students across North Carolina.

Student Outcomes

- Student participation: 286 students in Fall 2025; 397 students in Spring 2026
- Pre/post attitude survey: pre N = 48, post N = 43 (results should be read as indicative trends; no significance testing performed).
- Largest gains: critical thinking (+0.50), collaboration and communication (+0.65), and confidence applying math to real job situations (+0.29).



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2. Select the Groups tab.
3. Locate the Group called Gateway Math (CTE) Contextualization Material. Click to enter the group.
4. Access instructional content from the Group Resources tab.

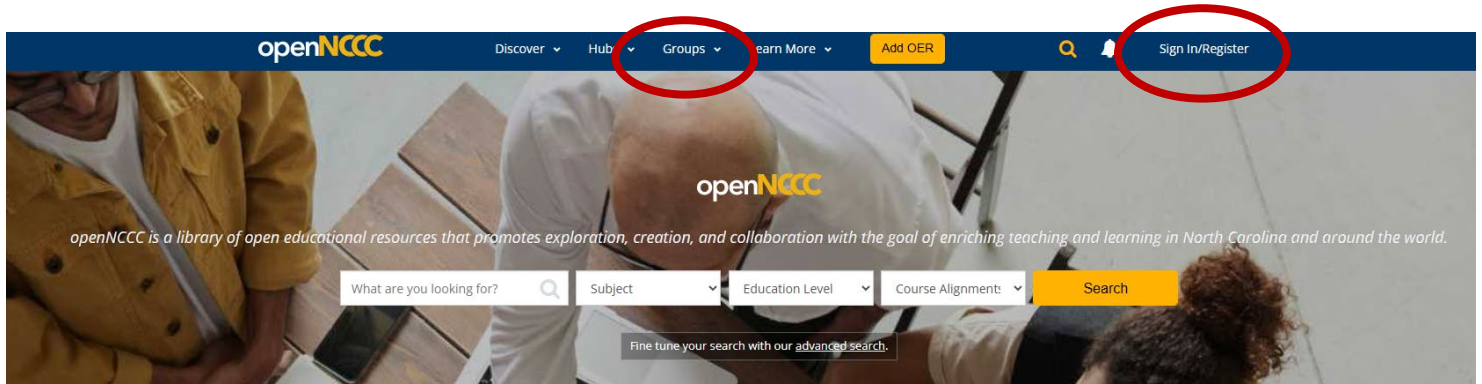
Faculty and industry participants by college, with lesson title

College	Faculty Pair	Featured Industry Partner	Contextual Lesson Created
Catawba Valley	Dustin King (MAT 143) Ron Hipps (HVAC)	Johnny on the Spot Heating & Cooling – Jeff McFarlane, Owner	Calculating Proper CFM Airflow for Indoor Air Quality Watch Launch Video
Gaston	Brad Wandler (MAT 152) Scotty Brooks (Civil Engineering)	Terracon – Jesse Boznak, Senior Construction Inspector; CJ Huelsman, PE, Materials Dept. Manager	Concrete Strength in Commercial Properties: From Field Testing to Load Calculations Watch Launch Video
Randolph	Carrie Lineberry (MAT 152) Scott Smith (Human Services)	Randolph County Dept. of Social Services – Tracie Murphy, Director; Jennifer Fracheur; Mariely Toledo	Food & Nutrition Services: Determining Eligibility Watch Launch Video
Stanly	Cyntha Mayo (MAT 143) Amy Witschey (Respiratory Therapy)	Atrium Health, Carolinas Medical Center – Tunisia L. Hunter, MBA RRT RCP, Director; with two Stanly CC graduates	Ventilator Settings: Using Patient Size to Determine Initial Settings Watch Launch Video
Wayne	Katie Holloman (MAT 110) Paul Casey (Industrial Systems / Mechatronics)	Franklin Baking Company – Thiel Geddings, Plant Manager; Jason Shepherd; Matt Corbett	Bread Production: Upgrading a Mixer Motor Watch Launch Video
Wilson	Christie Wuebbles (MAT 152) Stephanie Winstead (Biotechnology)	CMP Pharma – Michael DeHart, Director of Product Development; Ryan Campbell, Associate Chemist	From Tablet to Liquid: Making the Batch: Watch Launch Video

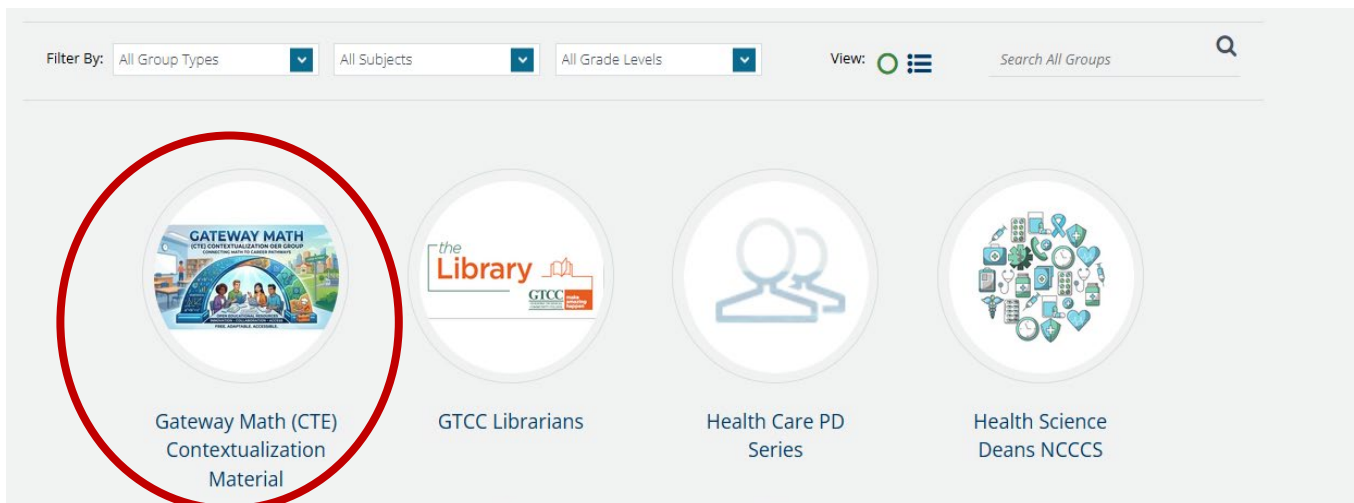
Industry-Contextualized Gateway Math lessons

Lesson Title	Gateway Course(s)	Math Topics	Related Program Areas
From Tablet to Liquid (Making the Batch) Data Decisions from Mix to Market Scenario: Students will use statistical analysis to critically evaluate data to determine whether the preservative level is appropriate for the formulation and whether it can be scaled up for production.	MAT 152	Graphs, mean, regression, statistics, standard deviation	Biopharmaceutical Technology; Manufacturing Technology; Process Engineering; Biotechnology; Medical Product Safety
Bread Production: Upgrading a Mixer Motor Scenario: Students explore technical aspects of manufacturing bread in an industrial setting and determine the most cost efficient method to reliably fix a faulty mixing motor.	MAT 110, 143	Formulas, percentages, proportions, rates	Industrial Systems Technology; Mechatronics Engineering Technology; Food Production
Using Patient Size to Determine Initial Ventilator Settings Scenario: Students consider the appropriate tidal volume settings (breath size) for a patient placed on mechanical ventilation. The student will understand the relationship between patient height and breath size needed within an Allied Health/Respiratory Therapy context.	MAT 110, 143	Conversion, formulas, unit analysis	Respiratory Therapy
Determining Food & Nutrition Services Eligibility as a Caseworker Scenario: Students will apply sequential logic, threshold analysis, and percentage-based calculations to determine if two distinct families qualify for state assistance (TAF). This associated lesson bridges the gap between raw data literacy and professional critical thinking.	MAT 110, 171	Conversions, functions, modeling, percentage	Human Services Technology / Social Services; Food & Nutrition Services
Concrete Strength in Commercial Properties Scenario: Students will evaluate tests on concrete strengths on job sites, determine whether concrete cylinders lead to a pass or fail situation, and make recommendations to the client based on your findings.	MAT 152	Area, data analysis, graphs, mean, standard deviation	Civil Engineering; Quality Assurance
Calculating Proper Cubic Feet per Minute Airflow for Indoor Air Quality Scenario: Students will analyze data from two floor plans to calculate space volume in cubic feet and determine whether the proper CFM (Cubic Feet per Minute) is being supplied. They will use industry standard air changes per hour charts to provide a professional recommendation, just as HVAC technicians would.	MAT 143	Conversions, formulas, rates, volume	Air Conditioning, Heating & Refrigeration Technology; Industrial Technologies; Interior Design; Architecture & Construction

How to Access the Perkins Contextualized Gateway Math in CTE lessons Free Resources Site for NC Faculty -- openNCCC



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Gateway Math (CTE) Contextualization Material

The purpose of this site is to disseminate educational resources and lesson plans generated during a recent Gateway Math Contextualization project. Funded by a Perkins Leadership grant and developed in collaboration with CORD, these materials emphasize practical application of math within CTE programs.

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