



**OREGON  
MATH  
PROJECT**

*Meaningful Math  
for Every Student*

# **High School Math Pathways Project**

## ***Executive Summary***

# Meaningful Math for All



## OREGON MATH PROJECT

*Meaningful Math for Every Student*

Realizing the vision of math education in Oregon includes ensuring that all students attain mathematics proficiency. This vision is realized through access to high-quality instruction that includes both challenging and relevant content in a learning environment where each student receives the support they need to succeed in mathematics. This is the work of the Oregon Math Project.

The [Oregon Math Project \(OMP\)](#) advances mathematics education in the state by cultivating a network of educators that promotes equitable math achievements for all students through guidance and the support of policies, standards, curricula, assessments, and instructional best practices.

While the Oregon Math Project encompasses K-12 education, this document provides an introduction to and guidance for implementing Oregon High School Math Pathways.

*This Executive Summary provides an overview of this work; for complete access to resources, see the [High School Math Pathways Communication Toolkit on the Oregon Math Project webpage](#).*

# Introduction to High School Math Pathways

## **“FOR FAR TOO LONG HIGH SCHOOL MATHEMATICS HAS NOT WORKED FOR FAR TOO MANY STUDENTS.**

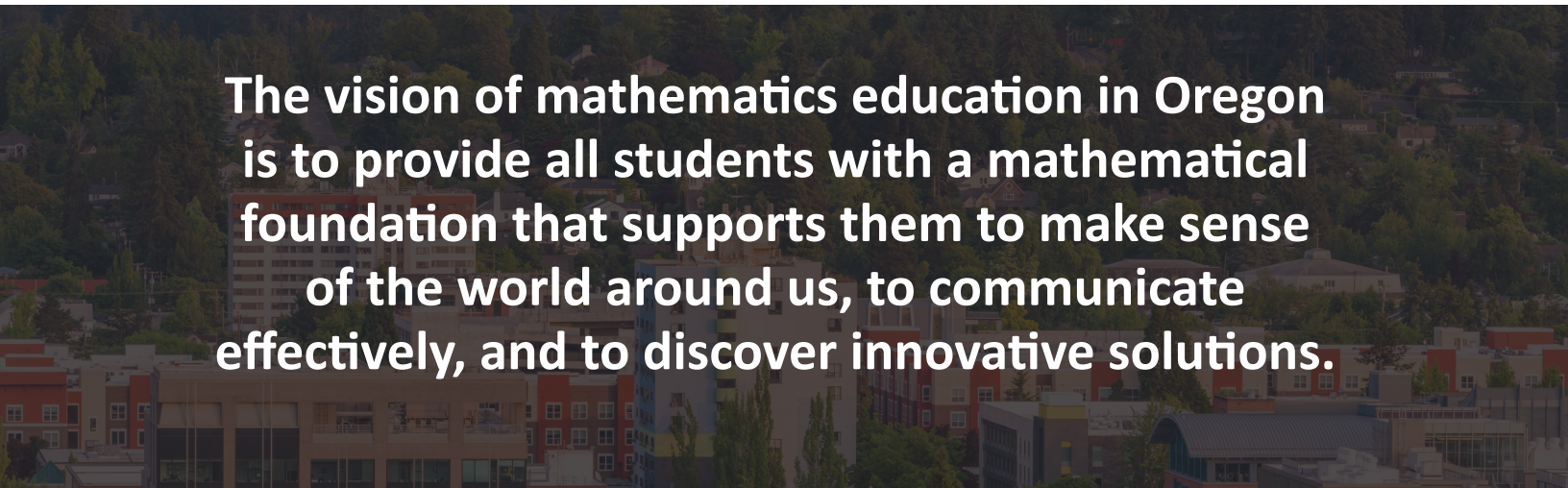
### **TOO MANY STUDENTS:**

- *Leave high school unprepared for college or a career, particularly a STEM career;*
- *Do not see how math is useful in their lives;*
- *Leave high school without an affinity for doing math;*
- *Leave high school without the quantitative skills necessary to make sound decisions.”*

*Larson, Matt. 2016. “President’s Message: Bringing Needed Coherence and Focus to High School Mathematics.” National Council of Teachers of Mathematics. October 25, 2016.*

Math education must evolve to meet the educational and career needs and aspirations of all students. The current high school sequence of courses (Algebra course followed by Geometry and then another course in Algebra) dates back to at least 1890. For generations, we have limited opportunities and access for students by promoting a one-size-fits-all approach. This approach has privileged some students and either left out or pushed out other students.

One of the most urgent education issues is ensuring equitable access to an excellent, more advanced mathematics education for all students. As the workforce continues to evolve and rely on advancing technology, mathematics education must meet the demands for mathematical knowledge and skills. We need to prepare Oregon students for 21st century careers and to be informed and engaged citizens in a world with changing technology that requires data literacy. Math instruction must support all students and offer options to help them reach their educational goals and career aspirations.



**The vision of mathematics education in Oregon is to provide all students with a mathematical foundation that supports them to make sense of the world around us, to communicate effectively, and to discover innovative solutions.**



# Oregon is Part of a National Movement

## Aligning K-12 with Higher Education and Career Readiness

Oregon seeks to align the two systems of K-12 and higher education in order to change the trajectory for the future generations of students, providing them with the tools they need to achieve their full potential. This includes meeting the demands of the ever-changing workforce and ensuring students have the skills to meet those needs.

The Oregon Department of Education (ODE), Higher Education Coordinating Commission (HECC) and Oregon Community College Association (OCCA) are in partnership to align the math requirements for high school graduation and college admission. Representatives from a wide range of institutions collaborated to design an equitable admissions process<sup>(1)</sup> rather than limiting students to a few specific math course titles. The work continues with aligning dual-credit high school College Now math courses with the Common Course Numbering<sup>(2)</sup> completed by

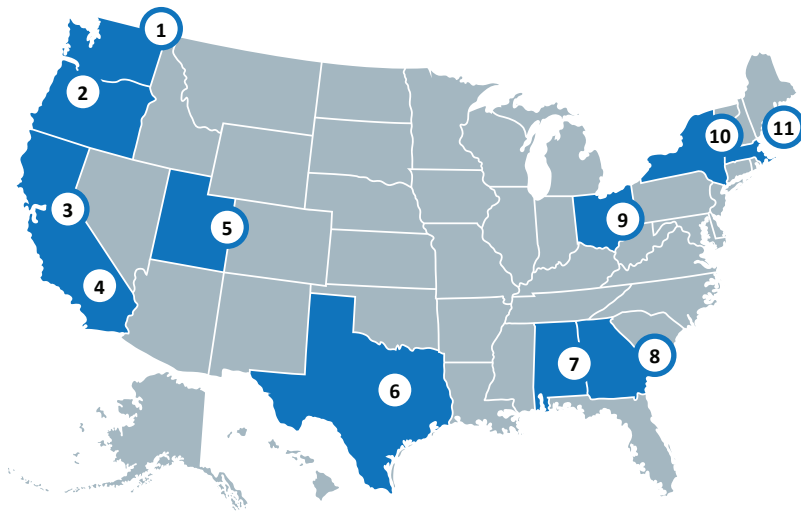
higher education. The common course numbering system, initiated through Oregon Senate Bill 233, aims to identify and articulate course learning outcomes implemented by all 24 public higher education institutions in Oregon.

This work is not just occurring in the state. Oregon has joined a national movement through the Launch Years Initiative<sup>(3)</sup> in modernized systems aimed at modernizing math systems. In modernized systems, math equips all students with the mathematical tools that will help them pursue their future goals.

**Oregon has joined 25+ other states in a nationwide effort to improve K-16 math pathways and outcomes.**



# Modernized Math Initiatives Across the Nation



This map includes a sample of other states' initiatives to build alternatives to the traditional math sequence:

Algebra → Geometry → Advanced Algebra

## 1 Washington

Legislated student choice in their 3rd year high school math class.

- [New Pathway Policies](#)

## 2 Oregon

Updated admissions requirements at public colleges and universities. Algebra 2 is no longer a requirement for admission starting Fall 2024.

- OR Admissions : [\[EOU\]](#) [\[OIT\]](#) [\[OSU\]](#) [\[PSU\]](#) [\[SOU\]](#) [\[UO\]](#) [\[WOU\]](#)

## 3 San Francisco Unified School District, CA

Removed tracks in K-12 mathematics courses and create a compacted Algebra 2 + Precalculus course.

- [Detracked Mathematics Progress](#)
- [Alg2+Precalc](#)

## 4 California

Updated admission policy at Stanford.

*Note: The UC System policy was being reviewed in the 2023-24 SY. Please refer to UC System webpages for the latest information.*

- [UC System](#)
- [Stanford's New Math Admissions](#)

## 5 Utah

Engaged in high school math pathways work that supports students' informed course-taking decisions.

- [Graduation Pathways](#)
- [Informed Decisions](#)

## 6 University of Texas at Austin, TX

Started the Launch Years Initiative through the Charles Dana Center to support 20+ states and districts in implementing modern and open math pathways.

- [Dana Center Mathematics Pathways](#)
- [States Involved in Math Pathways Reform](#)

## 7 Alabama

Reworked their high school math standards to focus on essential concepts. High school students now select math courses that best align with their goals.

- [Alabama Course of Study Mathematics](#)

## 8 Georgia

Ended remedial mathematics course-taking in college and has seen dramatic increases in equitable outcomes.

- [Alternative To Remedial Education](#)

## 9 Ohio

Established multiple math pathways for high school students aligned to postsecondary careers.

- [Math Modeling and Reasoning](#)
- [Decision Tree](#)

## 10 Ithaca City School District, NY

Removed tracks in K-12 mathematics, centering equity and community voice throughout the process.

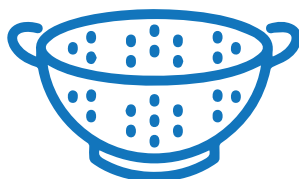
- [What's wrong with tracking students by math ability?](#)

## 11 Harvard University, MA

Updated admissions priorities that emphasize forms of service and deep learning over high status course-taking and test scores.

- [New Admissions Priorities](#)

# Re-Engineering Math Systems for Oregon Students



Uri Treisman of the University of Texas at Austin shared a metaphor of math education being designed as a **filter**, one that sorts and labels students as “math” or “non-math” people. In place of the filter, the challenge before us is to reimagine an equitable system that, like a **pump**, moves and lifts all students to their goals.

## **FILTER:** Engineered for Inequity

For generations, we have limited opportunities and access for students by promoting a one-size-fits-all approach to high school mathematics, marching all students on a path designed for success in Calculus. This approach has privileged some students and either left out or pushed out other students.

Currently, only about one third<sup>(1)</sup> of Oregon’s high school students meet proficiency on statewide math test scores. Even fewer students of color, economically disadvantaged, and English learners demonstrate proficiency. Students report that they do not see relevance in mathematics courses and do not see themselves as “math people.”

## **PUMP:** Re-Engineering for Equity

At the heart of this work is reimagining the math education system to stop it from acting as a filter in the system that sorts students into different educational tracks, and transform it into a pump that lifts a student to achieve whatever educational and career goals they have for themselves.

The Oregon Math Project encompasses multiple initiatives designed to increase the number of students who are on track to graduate. These initiatives also have a goal of increasing opportunities for students to learn and apply mathematics that will prepare them for the next phase of their mathematical journey.

### **What are Oregon students saying?**

*“Give more open-ended assignments that make me think and research real-world problems and ways we could solve them.”*

Student in Corvallis School District

*“In regular Algebra you took notes and did problems. In this class we do projects. I’m learning more math and it sticks.”*

Student in Salem-Keizer School District

# The Four Cornerstones

The Oregon Math Project has identified cornerstones that come together to create a **more modern and equitable system of mathematics within the state.**



## FOCUS

Learning experiences in every grade and course are focused on core mathematical content and practices that progress purposefully across grade levels.



## ENGAGEMENT

Mathematical learning happens in environments that motivate all students to engage with relevant and meaningful issues in the world around them.



## PATHWAYS

All students are equipped with the mathematical knowledge and skills necessary to identify and productively pursue any postsecondary paths in their future. Students have agency to choose from a variety of courses, contexts, and applications they find relevant.



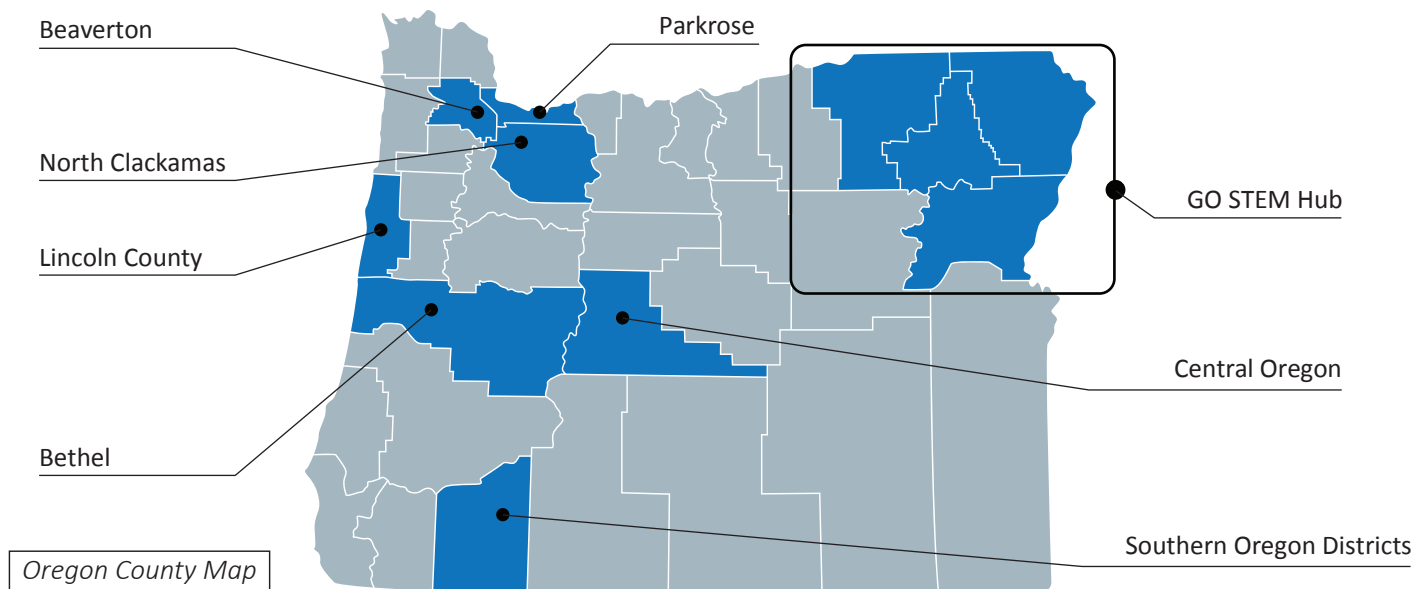
## BELONGING

Participation in mathematical learning builds students' identities and fosters a positive self-concept. Students' cultural and linguistic assets are valued in ways that contribute to a sense of belonging to a community of learners.

*This Executive Summary provides an overview of this work; for complete access to resources, see the [High School Math Pathways Communication Toolkit on the Oregon Math Project webpage.](#)*

# Modernizing Math for K-12 Students

Using the [Oregon Math Project Cornerstones](#), Oregon districts are reshaping their high school math programs to better help students reach their college and career goals. These efforts include: innovating math program data collection and use, adopting curriculum and classroom practices that center student agency, providing modern and aligned course options, and opening math pathways to all students. This map highlights some of the Oregon Math Project-aligned initiatives happening across Oregon.



## Beaverton School District

Offering a new modernized math pathway: data science & statistics, and evaluating the four cornerstones (focus, engagement, pathways, belonging) in their K-12 math program.

## Bethel School District

Using student data to drive pathways decisions, which led to detracking their K-12 math program.

## Central Oregon Districts

Piloting a new third credit math course: Data Science.

## GO STEM Hub

Supporting six school districts in piloting a third credit course in the quantitative reasoning pathway.

- *Wallowa County: Joseph SD, Enterprise SD*
- *Baker County: Pine Eagle SD*
- *Umatilla County: Ukiah SD*
- *Union County: Union SD, North Powder Union SD*

## Lincoln County School District

Piloting a new third credit course, Financial Algebra, offered in the quantitative reasoning pathway.

## North Clackamas School District

Increasing engagement and belonging by using complex instruction practices in their detracked middle school math courses.

## Parkrose School District

Using student-centered data to drive their belonging work to detrack their K-12 math program.

## Southern Oregon Districts

Aligning their new high school math pathways with their CTE<sup>(1)</sup> programs.

## Umatilla School District

Bringing better focus and engagement to their math courses by using [Illustrative Mathematics \(OER\)](#).



# High School Math Pathways 2 + 1 Model

The 2+1 course pathway model provides the structure for this innovation. It begins with two credits of **core content** for all students, and **third credit pathway options** that align to student interests and goals.

**Ensuring students have access to modern and relevant high school mathematics will take innovation and creativity to re-imagine what course experiences could look like for Oregon students.**



## Centering Equity when Designing High School Math Pathways:

- Who has been successful in mathematics in your district? How do you measure that?
- Who is accessing advanced math courses? Does this reflect the diversity of your student population?
- How do students gain access to math courses? Are there barriers to access such as prerequisites?
- What assumptions are you making in your course placement processes? What marginalizing practices are being upheld by these assumptions?

## Core Content

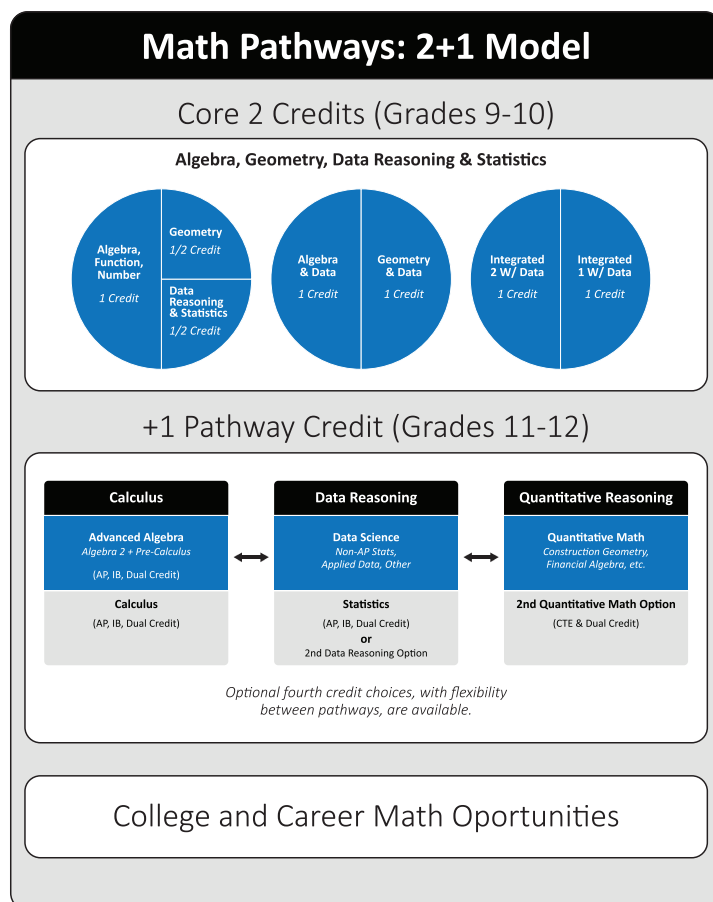
Core content is balanced between approximately one credit of algebra,  $\frac{1}{2}$  credit of geometry, and  $\frac{1}{2}$  credit of data science and statistics. Core 2 courses focus on the [2021 Oregon Math Standards](#).

## Third Credit Options

For third credit options, Oregon high school staff are invited to innovate by offering new specialized courses within three general paths:

- (1) a pathway to calculus;
- (2) a pathway to data science;
- (3) and a pathway to quantitative mathematics.

Third credit content prepares students for (or already is) college-level math courses at the 100 level.



# The Future of Math Education in Oregon

## How is the Oregon Department of Education Supporting High School Math Programs

### Example Math Pathways Projects:

- Creation of professional learning on Ambitious Math Teaching that could be used in all high school math courses.
- Funded policy alignment work between K-12 and higher education to ensure smooth transitions for students that move from high school to postsecondary math courses.
- Creation of communication and guidance documents just like this!

**For more information on the High School Math Pathways Project, email or visit the [ODE website](#).**

[ODE.MathProject@ode.oregon.gov](mailto:ODE.MathProject@ode.oregon.gov)

[www.oregon.gov](http://www.oregon.gov)

Realizing the vision of math education in Oregon includes ensuring that all students attain mathematics proficiency.

This vision is realized through access to high-quality instruction that includes both challenging and relevant content in a learning environment where each student receives the support they need to succeed in mathematics.

For a complete breakdown of topics and access to all resources, see the full High School Math Pathways Communication Toolkit on the [Oregon Math Project webpage](#).