Washington Bridge to College Transition Courses



BRIDGE TO COLLEGE MATHEMATICS--COURSE OVERVIEW

Bridge to College Mathematics Course is a year-long course focusing on the key mathematics readiness standards from Washington State's K-12 Learning Standards for Mathematics (the Common Core State Standards, CCSS-M) as well as the eight Standards for Mathematical Practices. The course is designed to prepare students for entrance into post- secondary credit bearing courses. The course addresses key learning standards for high school including Algebra I, statistics, geometry, and Algebra II standards essential for college- and career-readiness. *This course must be taught using the Bridge to College Mathematics curricular materials* and the appropriate course name, and course code (see below for details).

Course Name and Code: Bridge to College Mathematics - #02099

Description: The course curriculum emphasizes modeling with mathematics and the Standards for Mathematical Practice found within Washington K-12 Mathematics Learning Standards (the Common Core State Standards, CCSS-M). Topics include building and interpreting functions (linear, quadratic & exponential), writing, solving and reasoning with equations and inequalities, and summarizing, representing, and interpreting data. The course is designed to focus on building conceptual understanding, reasoning and mathematical skills and provides students engaging mathematics that builds flexible thinking and a growth mindset. For seniors who score in Level 2 on the Smarter Balanced 11th grade assessment and are successful in this course (B or better), the *Bridge to College Mathematics* Course offers an opportunity to place into a college-level course when entering college directly after high school (see Note 1. below).

Course Content and Approach

The Bridge to College Mathematics course focuses on the key readiness standards based on Washington State's K-12 Learning Standards for mathematics (the Common Core State Standards, CCSS-M) as well as the eight Standards for Mathematical Practices needed for students to be ready to undertake postsecondary academic or career preparation in non-STEM fields or majors. The course addresses standards throughout high school and even earlier, including Algebra I, statistics and geometry, and the Algebra II standards agreed to as essential college- and career-readiness standards for most students. The course consists of eight units: algebraic expressions, equations, measurement and proportional reasoning, linear functions, linear systems of equations, quadratic functions, exponential functions and summarizing and interpreting statistical data (optional). While this course covers the basics in math practices and reviews the procedural steps needed to be successful in math, the course design emphasizes a new, engaging way based heavily on conceptual teaching and learning. Each unit includes a "hook" at the beginning to engage students and pre-assess prior math experiences and understandings. The hook is followed by several days of tasks that delve deeply into math found in the Standards for Mathematical Practice and the lead headers of the Common Core—focus, coherence and rigor. Each







unit also includes a formative assessment lesson at just over the two-thirds mark, allowing the teacher to adapt instruction and learning during the remaining one-third of the unit. The curriculum is grounded in the Southern Regional Education Board's (SREB) Math Ready course (http://www.sreb.org/page/1684/math_ready.htm).

Note: For the 2014–15 Bridge to College Mathematics course pilot, teachers and faculty are using the course materials on the Washington Mathematics Assessment and Placement (WAMAP) course management platform (http://www.wamap.org) to access project information and course materials, provide feedback on units and lessons, propose additional course materials, and communicate with project leaders and each other. In June 2015, a team will review all feedback and make official course modifications for implementation during the 2015-2016 school year. Teachers who are interested in learning more about the course or trying out course materials in 2014-2015 can enroll in the course on WAMAP by using the course ID #7824 and enrollment key "math".

Recommended Priority for Student Enrollment

The Bridge to College Mathematics Course is a math course designed for seniors who scored at Level 2 on the Smarter Balanced 11th grade assessment and for:

- Seniors who have taken and passed Algebra 2.
- Seniors who have taken and passed a 3rd credit of math aligned to their post-high school goals.
- Seniors who are recommended by high school instructors based on other factors such as readiness and their high school and beyond plans.

Important Notes:

- Pending final review of the 2014-15 course pilots, beginning in fall 2016, seniors who completed the Bridge course with a B grade or better and scored at Level 2 on the Smarter Balanced 11th grade assessment, will be considered college-ready by Washington community and technical colleges and permitted to enroll enroll in an entry college-level math course (excluding precalculus) with no remediation or additional placement testing required.
- 2. Currently, the Bridge to Mathematics Course does not qualify for NCAA or for a COE course. However, we are continuing to pursue both of these options.
- 3. To meet the minimum admissions requirements for state baccalaureate institutions, students need to pass Algebra 2 for their 3rd credit of math. The Bridge to College Mathematics Course does meet the baccalaureate senior year requirement for a math or quantitative reasoning course as determined by the Washington Student Achievement Council (College Academic Distribution Requirements (CADR), 2014).

Key High School Learning Standards for the Bridge to College Math Course¹

The Real Number System

Extend the properties of exponents to rational exponents

Quantities*

Reason quantitatively and use units to solve problems

Seeing Structure in Expressions

- A. Interpret the structure of expressions
- B. Write expressions in equivalent forms to solve problems

Arithmetic with Polynomials and Rational Expressions

Perform arithmetic operations on polynomials

Creating Equations*

Create equations that describe numbers or relationships

Reasoning with Equations and Inequalities

- A. Understand solving equations as a process of reasoning and explain the reasoning
- B. Solve equations and inequalities in one variable
- C. Solve systems of equations
- D. Represent and solve equations and inequalities graphically

Interpreting Functions

- A. Understand the concept of a function and use function notation
- B. Interpret functions that arise in applications in terms of the context
- C. Analyze functions using different representations

Building Functions

- A. Build a function that models a relationship between two quantities
- B. Build new functions from existing functions

Linear, Quadratic, and Exponential Models*

- A. Construct and compare linear, quadratic, and exponential models and solve problems
- B. Interpret expressions for functions in terms of the situation they model

Similarity, Right Triangles, and Trigonometry

- A. Prove theorems using similarity
- B. Define trigonometric ratios and solve problems involving right triangles

Interpreting categorical and quantitative data

- A. Summarize, represent, and interpret data on a single count or measurement variable
- B. Summarize, represent, and interpret data on two categorical and quantitative variables
- C. Interpret linear models

Making Inferences and Justifying Conclusions

- A. Understand and evaluate random processes underlying statistical experiments
- B. Make inferences and justify conclusions from sample surveys, experiments and observational studies

Note: * indicates areas with an explicit modeling focus

¹ These standards are not meant to be comprehensive; instead, they are a subset of the Washington State Learning Standards (Common Core State Standards) identified as the essential standards for the Grade 12 transition course developed by college and high school faculty as part of the Washington *Core to College* project.