REDLANDS UNIFIED SCHOOL DISTRICT
HIGH SCHOOL COURSE APPROVAL REQUEST FORM
GRADES 9-12

THIS SECTION IS TO BE COMPLETED BY A SCHOOL DISTRICT REPRESENTATIVE:

School Submitting Information

School: All RUSD High School
(course offerings will be made available for all schools)

Department Math

Contact Information

Contact Person: Whitney Carnes   Phone: 909-307-5300 ext. 20363

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Summer Contact Person: _____

Phone (home or cell): _____ Email: _____

Course Information

Course Title: SAI Intergrated Math III   Transcript Name (15 Max): Int. Math III

Length of course: One year
(one semester, two semesters, or one-year course)

Amount of Units: 10

Area of Credit: Math

(How will this course satisfy graduation requirements? Math, English, Elective, etc. Will it roll to a secondary credit if any?)

Teacher Requirements

Credential Required: Special Education Credential   Additional Training: _____

Department Review Date: March 20 ,2024   Dept. Signature: _____

Site Administrator Signature: _____

THIS SECTION IS RESERVED FOR DISTRICT USE:

Assigned Reviewer Section

Reviewed by: Julie Swan   Date reviewed: March 20, 2024

- ■ District section of this form is appropriately completed
- ■ All required attachments are affixed and appropriate
- ■ Site signatures current and appropriate

Recommendation: ■ Approve ☐ Do Not Approve   Signature: _____

Course Approval Curriculum Committee

Approved by: Majority Decision   Date approved: 04/17/24

Date approval/disapproval notification letter sent: 04/19/24

Signature: _____

Board Submission Date: May 7, 2024   Board Approved Date: _____

SAI Math III Course

COURSE OUTLINE

The purpose of this course is to provide all students access to the Integrated Math III CCSSM during their 11th grade year. Integrated Math III provides students in higher-level mathematics and real-world applications. Through exploratory learning, problem-solving and real-world applications, students will delve into topics such as advanced algebra concepts, geometry, trigonometry, mathematical modeling, and data analysis and statistics. This course emphasizes a high level of rigor and the development of essential critical thinking skills, including analytical thinking, problem-solving, and communication. The course also aims to promote inclusivity by providing students with the mathematical knowledge, skills, and critical thinking abilities needed for success in advanced mathematics, higher education, and diverse real-world contexts.

Teacher Credential
Single Subject Special Education Credential

PREREQUISITES & CO-REQUISITES & TARGETED STUDENT POPULATION
No prerequisites.
Target population: Incoming SAI 11th graders

COURSE CONTENT
This course aligns with the Integrated Math III Common Core Standards for Mathematics. These standards include:
- Function Family Relationships (CCSS.MATH.HSA.CED, CCSS.MATH.HSA.APR)
- Trigonometric Functions (CCSS.MATH.HSA.TF)
- Complex Number System (CCSS.MATH.HSA.CN)
- Quadratic Functions and Modeling (CCSS.MATH.HSA.IF, CCSS.MATH.HSA.SSE, CCSS.MATH.HSA.BF)
- Geometry (CCSS.MATH.HSA.GPE, CCSS.MATH.HSA.G-MD, CCSS.MATH.HSA.G-MG, CCSS.MATH.HSA.G-SRT)
- Statistics and Probability (CCSS.MATH.HSS.S-IC, CCSS.MATH.HSS.S-ID)

Unit 1: Inferences and Conclusions from Data
Description: Students will explore statistical concepts, analyze data sets, and apply statistical methods to make inferences and draw meaningful conclusions from the data. Students will work hands on with different data sets and survey questionnaires to apply statistical methods to make inferences and draw conclusions from the data. They will also need to work on communicating their findings and recommendations effectively through presentations and discussions.
Student Learning Task: There will be a wide-range of activities and assignments, both summative and formative, throughout the unit for the students to engage in and showcase their learning progression on the topics. Student's will have a chance to work on a variety of fun and engaging statistic projects where they can be asked to synthesize multiple sources of information, draw connections between concepts, and make logical deductions. They will also be able to present their findings, analysis, and conclusions to the class through visual aids, reports, or presentations.

Unit 2A: Polynomial Relationships
Description: In this unit, students will delve into the properties and behaviors of polynomial functions, analyze their graphs, and apply polynomial concepts to real-world scenarios. Students should be able to analyze different polynomial functions and their properties, solve polynomial equations and inequalities using algebraic and graphical methods, and apply polynomial concepts to real-world problems and interpret solutions in context.
Student Learning Task: There will be a wide-range of activities and assignments, both summative and formative, throughout the unit for the students to engage in and showcase their learning progression on the topics. An important topic that students need to feel confident with is a graph ending behavior and how the exponents and leading coefficients can lend a hand in finding that information out. There is a great investigative activity that the students use to test different values on different functions and then able to make meaningful predictions to help them match polynomials to graphs without needing a calculator or Desmos.

Unit 2B: Rational and Radical Relationships

Description: Students will explore the properties and behaviors of rational and radical functions, analyze their graphs, and apply these concepts to real-world contexts. Students will practice operations with rational expressions, including addition, subtractions, multiplication, division, and simplification. And they will apply rational and radical equations using algebraic techniques and interpret the solutions.

Student Learning Task: There will be a wide-range of activities and assignments, both summative and formative, throughout the unit for the students to engage in and showcase their learning progression on the topics. Throughout this unit students will have to build on previous knowledge of math operations to work with rational expressions. They will apply different strategies, such as finding common denominators and factoring to simplify complex rational expressions. Students will be critically analyzing rational and radical functions, considering factors such as discontinuities, restrictions, and transformations. Once students solve their problems, they will be able to engage in class discussions to share insights, compare solution strategies, and reflect on the mathematical reasoning used in the task.

Unit 3: Trigonometry of General Triangles and Trigonometric Functions

Description: In this unit, students will learn the properties and relationships of trigonometric functions, apply trigonometric concepts to solve general triangles problems, and analyze trigonometric graphs and transformations. Throughout this unit student will be focusing on analyzing trigonometric functions and their properties, including graphs and key features. They will also solve general triangle problems using trigonometric concepts, including the Law of Sines and Law of Cosines. It will be important to show students how to apply trigonometric functions and triangle trigonometry to model real-world scenarios and interpret solutions in context.

Student Learning Task: There will be a wide-range of activities and assignments, both summative and formative, throughout the unit for the students to engage in and showcase their learning progression on the topics. As students begin exploring this newer concept, it is important for them to relate the unit circle to the different properties of trigonometric functions, including sine, cosine, tangent, secant, cosecant, and cotangent. This will allow them to analyze graphs to trigonometric functions to understand period, amplitude, phase shift, and other key features. Once they have this understanding, students can apply these functions to model and solve real-world problems such as navigation, engineering, physics, and astronomy.

Unit 4A: Mathematical Modeling of Inverse, Logarithmic, and Trigonometric Functions

Description: Students will explore the properties and behaviors of inverse, logarithmic, and trigonometric functions, apply these functions to mathematical modeling, and analyze real-world applications. Key learning objectives for the students will be to analyze inverse and logarithmic functions and their properties, including graphs and key features. Apply these functions to real-world phenomena and make predictions, while evaluating mathematical models, analyze model accuracy, and interpret model results in context.

Student Learning Task: There will be a wide-range of activities and assignments, both summative and formative, throughout the unit for the students to engage in and showcase their learning progression on the topics. Students will build off their previous understandings of inverse functions and their relationships to original functions. This will build into their understanding of logarithmic functions and their properties, including logarithmic identities and transformations. Once students have the foundational skills for logarithmic functions it will be important to model real-world scenarios, such as population growth, radioactive decay, sound waves, and circular motion, to help students learn how to interpret mathematical models, analyze their accuracy and limitations, and make predictions based on those models.

Unit 4B: Mathematical Modeling and Choosing a Model

Description: Students will explore various mathematical models, analyze their effectiveness in different contexts, and make informed decisions about choosing appropriate models for real-world scenarios. They revisit the process of creating equations in one variable and explore creating constraints and rearranging formulas. The students then learn about transforming models and combining functions. Students review various kinds of functions, including linear, exponential, quadratic, piecewise, step, absolute value, square root, and cube root functions, all with an eye to choosing a model for a real-world situation. Finally, students consider geometric models, including two-dimensional cross sections of three-dimensional objects.

Student Learning Task: There will be a wide-range of activities and assignments, both summative and formative, throughout the unit for the students to engage in and showcase their learning progression on the topics. Students will use all their past mathematical knowledge to analyze the structure, assumptions, and limitation of each model type they have been taught, including linear models, exponential models, logarithmic models, polynomial models, and trigonometric models. They will

also compare and contrast these models based on their strengths and weaknesses to help students find the effectiveness of each mathematical model within real-world phenomena.

COURSE MATERIALS
- Walch Integrated Math Textbook and Student Workbooks (4 Units, 6 Books)
- Integrated Math III Scope and Sequence (Mathematics Shared Google Drive)