

**Catalina Foothills School District  
Tucson, Arizona**

TO: C.F.S.D. Governing Board  
FROM: Mary Jo Conery, Assistant Superintendent for 21<sup>st</sup> Century Learning  
DATE: December 6, 2011  
RE: Proposed Course Changes for High School Mathematics and Course Title Changes for English 12

The State Board of Education (SBE) adopted the Common Core Standards for English Language Arts & Literacy in History/Social Studies, Science & Technical Subjects and Mathematics on June 28, 2010. The Arizona state-specific additions to the Common Core Standards were adopted on August 23, 2010. These Common Core Standards are now entitled 2010 Arizona English Language Arts Standards and 2010 Arizona Mathematics Standards. As you are aware, CFSD has been unpacking the new standards and shifting content, as needed to realign the curriculum. Specifically, this year, we are focused on grades 6-12 in this work.

As a result of the new standards in mathematics, we are proposing changes to the high school mathematics pathway (see Attachment 1). There are several reasons we are proposing the changes. First, the expectations for student achievement have been raised in order to ready students for college and career. This necessitates content changes to existing courses. The changes are being driven by the Common Core State Standards (CCSS). Second, there are specific conceptual categories and domains in the mathematics standards that are now integrated across courses (e.g., Functions) and the existing courses that were built around those areas of focus are no longer needed. Third, the Common Core State Standards/2010 Arizona Standards for mathematics raises the level of expectation for algebra proficiency for all students prior to high school. This lead us to propose a change in the course structure for Algebra 1 at the high school. We are seeking your approval on the following proposed changes:

(1) Eliminate the following courses:

- Functions: This is now a conceptual category with four domains and related standards that are integrated into other courses.
- College Algebra & Trigonometry: Both of these semester courses are currently offered as 4<sup>th</sup> credit options after Algebra 2. However, with the increased expectations for Algebra 2 in the CCSS, these semester courses will replicate content already being addressed in Algebra 2.
- Honors Calculus: This course was added during the last revision to provide students with an alternate course coming out of Honors Algebra 2/Trigonometry or Honors Precalculus. At that time, the only option for those students was AP Calculus. Now students have the option of selecting Statistics/Discrete Mathematics, AP Statistics, or AP Calculus. The addition of this course also allowed for a transition to the new curriculum expectations; it met the needs of students from the previous mathematics pathway.

At the same time the Honors Calculus course was added, the content for the Honors Precalculus course was revised to prepare students for AP BC Calculus and AP Statistics, recognizing that some students will prefer to take AP AB Calculus instead of BC Calculus. Four years later, we have now outlived the need for an Honors Calculus class. Recall that this course is taught at a college level. The content is similar to that of AP AB Calculus. Therefore, we see the logical progression to be AP AB Calculus after successfully passing Precalculus. This transitional course is no longer needed. Also, please note that the Honors Precalculus class is doing what is intended. The number of students enrolling in AP BC Calculus continues to grow each year with most students earning a “5” on the AP Exam.

- Algebra 2 Essentials: This course is not being offered this year. With the increased expectations in the CCSS, student intervention needs to happen prior to Algebra 2. Students will continue to have access to Math Lab for Algebra 1, Geometry, and Algebra 2.

(2) Add the following course:

- Precalculus: The addition of this course is being driven by the CCSS. As noted earlier, the new standards for Algebra 2 incorporates much of the current content in College Algebra and Trigonometry and will replicate content. The Precalculus class will have similar content to Honors Precalculus, but will not be taught at the honors level. It will, however, prepare students for AP AB Calculus. Additionally, it will prepare students for Calculus 1 at the University level. Adding this course to the pathway will provide a viable option for students coming out of either Algebra 2 or Honors Algebra 2/Trig who want to prepare for Calculus.

(3) Restructure high school Algebra 1 to reflect other high school courses with Honors Distinction. The Common Core State Standards/2010 Arizona Standards for mathematics raises the level of expectation for algebra proficiency for all students prior to high school. Based on our review, we estimate that at least one fourth or more of the current content is now included in the 8<sup>th</sup> grade expectations for algebra. Additionally, from a historic perspective, we find that, on average, only 7 students (range is 4-10) who begin Honors Algebra at the high school level continue to take honors courses throughout their career at the high school. This was confirmed by reviewing data in PowerSchool for the past three years. Therefore, we believe restructuring Algebra 1 to include Honors Distinction serves three purposes:

- It will continue to actively engage students in algebra since much of the current content in Algebra 1 will be taught at middle school. Those students who were not eligible for Honors Algebra 1 at the middle school will have an opportunity to earn honors credit in the Algebra 1 class and continue taking honors level classes if they meet the proficiency expectations.
- It continues to provide the Honors Algebra 1 option for those students who transfer to the high school from another school/district. Although, on average, our historic data shows that only 7 of this group of students continues to take honors level courses, this meets the need for that group of students and provides an opportunity for other transfer students to earn honors credit in Algebra 1.
- It sets the bar for increased mathematics expectations at the high school level as reflected in the CCSS/2010 Arizona Mathematics Standards. The new standards focus on application of the skills and strategies that students learn. There is less emphasis on learning skills and more on using the skills through critical thinking and problem solving in contextualized situations. The assessments will change to reflect this emphasis. Since Arizona high school students are required to pass the state assessment at the high school level, this course will raise the level of Algebra for all students at the high school. It is our intent to differentiate instruction and assessment for those students who desire to earn Honors Distinction. Consistent with board approved past practice, students who consistently demonstrate performance at the equivalent of 3.5 or above will earn Honors Distinction in Algebra 1.

Please note that the proposed changes do not require any modifications to the operational procedures of the mathematics program of study at the high school. All assessment and placement procedures/criteria are unchanged and will continue to inform decisions about student needs.

Overall, the Common Core State Standards/2010 Arizona Mathematics Standards raise the expected level of mathematics performance for all students. We view that as a good thing. The pathway recommended in the CCSS is similar to the current CFSD pathway with the exceptions noted above. The new standards push all levels to contextualize mathematics in authentic situations that require critical thinking and problem solving. All of the standards are embedded in mathematical practices that require students to analyze, solve problems, and extend their thinking. As a district, we continue to be proactive in developing a program of study that prepares our students to meet these challenges and perform at high levels.

## **Changes in Mathematics Course Titles and Descriptions**

The board is asked to approve changes to course titles and/or course descriptions as a result of the proposed changes described above.

### **Algebra 1**

Algebra 1 students will use the language of algebra—its vocabulary, symbols, and reasoning—to solve problems, describe relationships and patterns, and apply algebra to represent real-life situations. Using algebraic, numerical, and graphical representations, students will use critical and creative thinking to solve problems and acquire the algebraic foundation and skills necessary for Geometry and Algebra 2.

*Students who consistently perform at the honors level in their coursework and assessments may be awarded honors credit/distinction for this class.*

**Credit: 1 credit, 2 semesters**

### **Algebra 2**

Algebra 2 builds upon the concepts and skills learned in previous mathematics courses. Students will study functions and relations, with an emphasis placed on conceptual understanding, graphical representation, problem solving, modeling, and application. Trigonometric concepts are introduced, developed, and extended. This course is designed to prepare students for college-level mathematics.

**Prerequisite: Algebra 1 or Algebra 1 Essentials, Geometry**

**Credit: 1 credit, 2 semesters**

### **Precalculus**

Precalculus will extend and refine algebraic and trigonometric concepts introduced and developed in Algebra 2. This course emphasizes critical and creative thinking in its design for students who wish to further their advanced algebra skills. Precalculus is taught at a level and pace to prepare students for AP Calculus AB.

**Prerequisite: Algebra 2**

**Credit: 1 credit, 2 semesters**

### **Honors Precalculus**

Honors Precalculus will extend and refine advanced algebraic and trigonometric concepts and will introduce concepts in probability, statistics, vectors, parametrics, and polars. This course emphasizes problem solving through application and technology. This rigorous course is designed to prepare students who excel in mathematics for future AP Calculus BC and AP Statistics and/or college coursework in Statistics and Calculus.

**Prerequisite: Honors Algebra 2 with Trigonometry and Honors placement requirements**

**Credits: 1 credit, 2 semesters**

## **Amended Course Titles and Description for High School English 12 Options**

We are once again bringing back to you the course titles and description for the English Language Arts Grade 12 options that fulfill the graduation credit requirement at the high school. Because the state universities are using the Arizona Board of Regent's (ABOR) "Policy Number 2-102: Undergraduate Admission" (revised November 2009) to determine if high school courses meet specific admission requirements, we want to ensure our course titles and descriptions meet the criteria. We are also governed by the requirements of the NCAA. We have had situations where nonconventional course titles are misinterpreted by colleges/universities.

One aspect of our curriculum revision process is to write course titles and descriptions for the high school program of study. We are proposing that all English 12 courses be titled *English 12* with a common course description that describes the requirements for all English 12 options. We will continue to provide students with additional information about the English 12 options, but they will be used only for the high school course description guide and registration purposes. Additionally, we have reviewed the expectations in the Common Core State Standards/2010 English Language Arts Standards and the descriptions reflect those requirements. We are proposing the following course title and description changes for English 12:

### **English 12**

In English 12, students read, write, and analyze narrative and expository texts. They are expected to think critically about arguments, synthesize ideas from various sources, write with an effective style and voice, undertake independent research, and use a variety of strategies to communicate with others. Students enhance their understanding of the dynamic between an author, audience, and text/subject, as well as the way standard language conventions and the resources of language contribute to effectiveness in writing. To meet the needs of the 21st century students, instruction is enhanced through a wide range of literature and media genres. Students integrate content, thinking skills, and technology, as needed, to learn and communicate effectively with a wide range of audiences. The English 12 course offerings listed below may vary by theme, but include the same curricular expectations.

*Students who consistently perform at the honors level in their coursework and assessments may be awarded honors credit/distinction for this class.*

**Grade: 12**

**Prerequisite: English 11, Humanities 11, AP English 11**

**Credit: 1 credit, 2 semesters**

### **Course Descriptions that Differentiate Senior Options (for HS Course Description Guide):**

#### **Language and Composition**

Students will read and write extensively in a variety of genres and modes. In addition to analyzing literature and rhetoric, students read and analyze poems, plays, short stories, articles, editorials, web-based texts, essays, as well as book-length fiction or nonfiction, and visual texts. In preparation for college, career, and life-long literacy, students will read a variety of texts and write for a variety of audiences and purposes.

#### **The Craft of Persuasion**

Students will explore the social and political implications of various persuasive forms while considering these topics: how literature and rhetoric can shape notions of reality, perpetuate or alter stereotypes, and reinforce or undermine cultural barriers. This course emphasizes the skills required to navigate a rapidly changing environment: to make meaning from numerous, often disparate sources, to communicate in traditional modes and with emergent technologies (blog, video, multimedia). In preparation for college, career, and life-long literacy, students will read a variety of texts and write for a variety of audiences and purposes.

#### **Science in Science Fiction**

Students will explore the reciprocal impact of major science fiction and traditional literature on modern social and scientific thinking. Since many of today's challenging social issues are addressed in science fiction, the course examines contemporary non-fiction science writing of many of these ideas alongside significant science fiction texts to examine this interface from an analytical perspective. In preparation for college, career, and life-long literacy, students will read a variety of texts and write for a variety of audiences and purposes.

#### **War and Conflict**

Students will read a wide variety of literary works about war, aggression, and conflict, and correspondingly, peace, cooperation, and resolution. Course literature illuminates life during wartime, the psychology and

biology of aggression, the art of strategy, typical human responses to conflict within specific social systems, and the philosophical contexts of human conflict. In preparation for college, career, and life-long literacy, students will read a variety of texts and write for a variety of audiences and purposes.

**Mystery of Human Experience**

Students read and view fiction and nonfiction of all sorts (science, history, philosophy, ethics, psychology, anthropology, technology, math, art, and music) to consider the mysteries of life and the human experience. This course devotes most of its time to teaching students to see beyond the narrow confines of traditional literature and into the nature of literature as it scrutinizes paradigms of thought and perception. In preparation for college, career, and life-long literacy, students will read a variety of texts and write for a variety of audiences and purposes.

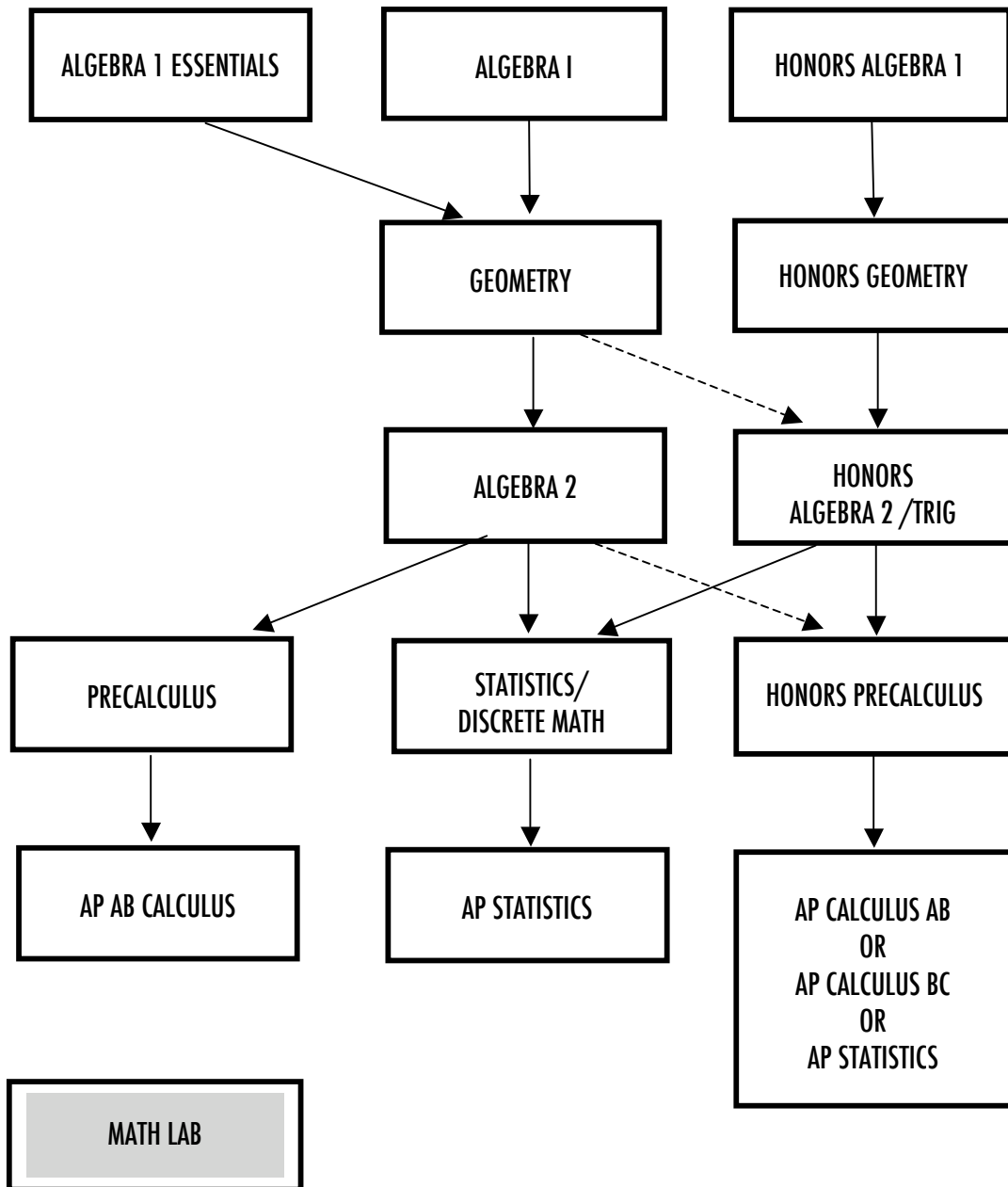
**Recommended Motion: I move the Governing Board approve the course additions and deletions in the high school mathematics pathway to align with the new learning expectations in the Common Core State Standards (Arizona 2010 Standards) for implementation in August 2012.**

**Recommended Motion: I move the Governing Board approve the amended course titles and descriptions for the English 12 options as presented for immediate implementation in the high school course guide for the 2012-13 school year.**

ATTACHMENT 1

# CATALINA FOOTHILLS MATHEMATICS PATHWAY

Four credits of math courses are required for CFHS graduation. Students are required to take Algebra 1, Geometry, Algebra 2 and one additional 4<sup>th</sup> credit course. Math Lab does not count as the additional math credit towards graduation requirements. The Arizona universities require one year beyond Algebra 2. Any student may take elective courses beyond the required courses.



-----> Prerequisites required for students taking these paths.