INTEROFFICE CORRESPONDENCE
Los Angeles Unified School District
Division of Instruction

TO: High School Principals

DATE: December 12, 2017

FROM: Derrick Chau, Ph.D
Senior Executive Director, P-12 Instruction

Patricia Heideman
Administrator, High School Instruction

SUBJECT: TRANSITION TO COLLEGE MATHEMATICS AND STATISTICS

The purpose of this interoffice correspondence is to provide information regarding Transition to College Mathematics and Statistics (TCMS) implementation for high school students. TCMS is a fourth-year college preparatory mathematics course to provide students a fourth year mathematics option. The purpose of TCMS is to prepare seniors who have taken Algebra 2 and beyond, but scored at "Standard Nearly Met or Not Met" in the grade 11 Early Assessment Program (EAP) tested through the Smarter Balanced Assessment (SBA). TCMS is designed to:

- Ensure college readiness for students who complete Algebra 1, Geometry, and Algebra 2 to place in a college level course for both STEM-majors and Non-STEM majors
- Ensure that students avoid placing in a college level course with support and/or Early Start in their first year in college.

Course Code	Course Title	Required	Credits	Term	A-G	Grade Span
310611	Transition to College Math and Statistics A	Y	5.0	F	C	12
310212	Transition to College Math and Statistics B	Y	5.0	S	C	12

TCMS Course Content:

Students in TCMS develop their understanding of interpreting categorical data; and extend their thinking of linear, exponential, quadratic, power, circular, and logarithmic functions to model quantitative relationships and data patterns whose graphs are transformations of basic patterns. They develop their understanding of rules of probability; binomial distributions; expected value; comparison of sample surveys, experiments, and observational studies. TCMS provides students an understanding of informatics, spatial visualization and representations as well as mathematics of democratic decision making. Students will participate in:

- Problem-solving inquiry-oriented lessons
- Lessons integrating technology
- Developing a rich understanding of the important mathematics that makes sense to them through new situations and problems by investigations of real-life contexts and problems.

Students who may enroll in TCMS:

- Seniors who need a fourth-year mathematics course option other than calculus
- Juniors who may want another upper level mathematics

LAUSD is in the second year of implementing TCMS district-wide with university and non-profit foundation partners. The required textbooks and instructional materials, as well as teacher professional development to support a successful implementation of this course is provided at no cost the schools. TCMS professional development is funded through the state College Readiness Grant. The schools are responsible for including the TCMS course in the master schedule.

Schools interested to offer TCMS in 2018-2019 would:

- Submit intent to offer the TCMS using "Intent to Offer TCMS" form (Attachment A) to the Division of Instruction
- Identify the teacher(s) who will teach the course
  - The teacher(s) must attend the required TCMS professional development beginning in June 2018 and three additional PD sessions continuing throughout 2018-19. Teachers will be paid at teacher hourly rate for completing the four-day PD

Principals are encouraged to use the following criteria to identify one teacher who will be trained to teach the TCMS course:

- Mathematics credential to teach courses <u>beyond</u> Algebra 2
- Teachers who have taught an advanced level mathematics course such as Statistics and Probability
- Success with struggling students
- Teacher commitment to attend all four professional development
- Using data effectively to plan instruction

Summer TCM Professional Development:

Teachers need to attend one of the following two sessions to teach the TCMS course:
Session 1: June 14, 2018
Session 2: August 2, 2018

Attachments:
A – Intent to Offer TCMS course
B – UCOP A-G TCMS Course Description

c: Michelle King
Vivian Ekchian
Frances Gipson
Local Districts Superintendents
Administrators of Instruction
Nicole Elam-Ellis
Jesus Angulo
Carol Alexander
Philip Ogbuehi

Los Angeles Unified School District
Division of Instruction
Secondary Mathematics

Attachment A

Transition to College Mathematics and Statistics (TCMS) provides an alternative course pathway for high school students. TCMS is designed to support college readiness for students who complete Algebra 1, Geometry, and Algebra 2. Students who complete TCMS with a "C" or better will have a greater chance in being placed in college-level general education mathematics classes without additional support.

I understand the purpose of the TCMS. I, therefore agree to provide the intended course as designed with appropriate support.

Principals should scan and email the completed form to:
Patricia Heideman, Administrator of High School Instruction, Division of Instruction
at pheidema@lausd.net with the subject line "Intent to offer TCMS"
Deadline to Return Form: Friday, March 30, 2018.

School Name		Location Code	
		Local District	__NW __NE __S __ C __E __W
Principal Name		LAUSD Email	@lausd.net
AP SCS Name		LAUSD Email	@lausd.net
Math Coordinator Name		LAUSD Email	@lausd.net

I recommend the following teacher to be trained for the course:

Transition to College Mathematics and Statistics- Roster-Carrying Teacher for 2018-2019

Assigned Math Teacher Last Name, First Name	Employee Number	Program (GenEd or SDP-Core)	Grade Level(s)	Number of Sections	Projected Enrollment Estimate # of students per section

Principal Signature: _____ **Date:** _____

For questions, please contact Philip Ogbuehi, Division of Instruction at (213) 241-6444 or email at: philip.ogbuehi@lausd.net.

Transition to College Level Mathematics and Statistics Course Description

Course Purpose: The *Transition to College Mathematics and Statistics (TCMS)* course provides an effective way of addressing the need in many schools for a fourth year high school mathematics course beyond Algebra II and Geometry. It also helps schools meet the California State Standards, particularly the Mathematical Practices standards. It is anticipated that the *TCMS* course content, with its realistic problems, projects, relevant applications, and appropriate use of technology tools, will stimulate more college-intending students to elect a fourth year of mathematics.

The *TMCS* course at LAUSD is designed as a capstone course for high school mathematics programs. Students who complete three high school mathematics courses together with the *TCMS* course will be well-prepared for two-year or four-year college programs and also for training programs leading to career-level jobs.

The mathematical concepts that will be used as one of multiple measures to place students in college mathematics courses. As a formative assessment, students will use an adaptive online mathematics resource (ALEKS) throughout the year to measure their progress toward college level quantitative reasoning mathematic course. The ALEKS module employed is identical to that used by CSU Northridge (CSUN) to place students into or out of mandatory supports in general education mathematics. This steady stream of formative assessments will guide instructors and course coordinators as they progress through the *TCMS* topics. (For details see Assessment Plan below.)

The Student Learning Outcomes for this course are:
1. Students will be proficient at the California State Standards for Mathematical Practice.
2. Arithmetic: Students will be able to perform basic arithmetic with fractions, decimals, and percents. They will be able to recognize contexts in which these operations are appropriate and interpret their results in context.
3. Data: Students will be able to read, analyze, and interpret data. They will be able to understand and summarize statistical measures, graphical presentations, and tabular summaries of data. They will be able to recognize contexts in which these tools are appropriate and interpret their results in context.
4. Solving: Students will be able to solve equations involving linear, will be able to recognize contexts in which graphing is an appropriate approach to solve a problem or to communicate information. They will be able to interpret graphs in context.

TCMS Book Content by unit

Unit 1. Interpreting Categorical Data develops student understanding of two-way frequency tables, conditional probability and independence, and using data from a randomized experiment to compare two treatments.

Topics include two-way tables, graphical representations, comparison of proportions including absolute risk reduction and relative risk, characteristics and terminology of well-designed experiments, expected frequency, chi-square test of homogeneity, statistical significance.

Historical knowledge expected include basic arithmetic of fractions, decimals and percents; graph, chart, and table reading.

Unit 2. Functions Modeling Change extends student understanding of linear, exponential, quadratic, power, circular, and logarithmic functions to model quantitative relationships and data patterns whose graphs are transformations of basic patterns.

Topics include linear, exponential, quadratic, power, circular, and base-10 logarithmic functions; mathematical modeling; translation, reflection, stretching, and compressing of graphs with connections to symbolic forms of corresponding function rules.

Historical knowledge expected include basic algebra and graphing of linear, quadratic, logarithmic and exponential expressions;

Unit 3. Counting Methods extends student ability to count systematically and solve enumeration problems using permutations and combinations.

Topics include systematic listing and counting, counting trees, the Multiplication Principle of Counting, Addition Principle of Counting, combinations, permutations, selections with repetition; the binomial theorem, Pascal's triangle, combinatorial reasoning; and the general multiplication rule for probability.

Historical knowledge expected include basic arithmetic of fractions, decimals and percents; graph, chart, and table reading;

Unit 4. Mathematics of Financial Decision-Making extends student facility with the use of linear, exponential, and logarithmic functions, expressions, and equations in representing and reasoning about quantitative relationships, especially those involving financial mathematical models.

Topics include forms of investment, simple and compound interest, future value of an increasing annuity, comparing investment options, continuous compounding and natural logarithms; amortization of loans and mortgages, present value of a decreasing annuity, and comparing auto loan and lease options.

Historical knowledge expected include basic algebra of linear and quadratic expressions; logarithms and exponential expressions;