

Connecticut State University System

Mathematics Proficiency and Placement Statement

CSUS Committee of Mathematics Chairs - August, 2009

Background

Pursuant to Special Act No. 07-7, *An Act Concerning Public Institution of Higher Education System Transfer and Articulation Process*, the Connecticut State University System (CSUS) submitted on January 1, 2007 a “Report on Proficiency for College Level Courses” to the Department of Higher Education (DHE). As required in the legislation, the report was written to assist DHE in their consideration of “placement test scores for the community-technical college system and the Connecticut State University system that establish specific proficiency levels for all matriculated students entering college level courses.”

While the legislation does not prescribe specific outcomes for this work, the CSUS interprets the intent to encompass the following aspects: a) consistent proficiency definitions and testing procedures across the universities; b) alignment with proficiency definitions outside the CSUS, in particular with the Connecticut Community College System (CCC System); and c) provision of a set of expectations for the P-12 educational system to serve as guidelines for the preparation of students in high school. Impetus for this work is also provided by the CSUS Board Resolution 03-42 requiring that all students demonstrate proficiency or complete satisfactorily proficiency courses within the first 24 university level credits and that proper alignment and communication with the CCC and the P-12 systems be established.

This statement is the result of careful consideration of all educational issues to ensure appropriate levels of performance for CSUS university work. It is a result of numerous meetings conducted by the Chairs of Mathematics departments at the CSUS at the university and system levels conducted during the 2008-09 academic year and the Summer of 2009.

The *working definition* of proficiency used in this document is the demonstrated level of knowledge and skills necessary to undertake the first (lowest level) General Education credit-bearing course in mathematics at a CSUS university. A testing procedure generally accompanies the determination of proficiency. This testing is also generally used to place students in appropriate level mathematics courses.

Mathematics Proficiency and Placement Criteria and Procedures Beginning Fall 2009

Table 1 summarizes proficiency and placement criteria and procedures to be instituted at the CSUS universities beginning the Fall semester of 2009. A comparison with the CCC System policy, as amended on May 19, 2008, is included. All CSUS universities have adopted a threshold score of 550 in the SAT Mathematics Test as the measure of proficiency for entering freshmen. The test is also being used for placement purposes in specific mathematics courses that possess equivalent levels of difficulty at all universities. For students not reaching the proficiency threshold, regular, intensive or accelerated courses are offered, which may include a combination of direct instruction, self study and laboratory practice to reach proficiency in one semester. These multiple approaches allow students to choose, with appropriate guidance, the best course of action for their particular performance level and academic goals.

TABLE 1 – Fall 2009 SAT Based Proficiency and Placement Scheme in the CSUS¹

Level	CCSU		ECSU		SCSU		WCSU		CCC System	
	SAT Score	Course Eligibility	SAT Score	Course Eligibility	SAT Score	Course Eligibility	SAT Score	Course Eligibility	SAT Score	Course Eligibility
A	450 or below	MATH 099: Elementary Algebra Review of fundamental algorithms of whole numbers, integers, rational numbers, and elementary algebra.	450 or below ACT 1-16 Accpl: below 40 EA	MAT 098 Elementary Algebra. Review of basic mathematics concepts and Introduction to algebraic techniques	450 or below Accpl: below 60 EA	MAT 095: Elementary Algebra. Linear equations, polynomials, straight lines, graphing, exponents, and word problems	490 or below ACT: 1-17 Accpl: less than 70 EA	MAT 098: Elementary Algebra. First order linear equations, manipulation of algebraic expressions, solution of linear equations and inequalities, graphing and applications	Accpl: 53 EA or lower	Developmental math course
B	460 to 490	MATH 099, or a MATH 101 Combination course including manipulating and simplifying polynomials and rational expressions; algebraic techniques including solution of first and second degree algebraic equations and inequalities; solution of systems of equations and inequalities; graphing and applications; and exponential functions and logarithms	460 to 490 ACT: 17 Accpl: 40-54 EA	ONE SEMESTER OPTION: Take MAT 101W (an accelerated course which combines the content of MAT 098 and MAT 101). TWO SEMESTER OPTION: Take MAT 098 the first semester, and then take MAT 101 the following semester. Includes real number system, higher degree equations and inequalities, functions and inverses, curve sketching, exponential and log functions, and analytical geometry	460 to 490 Accpl: 60-69 EA	MAT 102: Intermediate Algebra B: an extended course (4 contact hours/week) Solutions to quadratic equations, functions, graphing, rational, radical and exponential functions				
C	500 to 540	MATH 101: Intermediate Algebra - Review and extension of elementary algebra. A study of functions including their algebraic properties and graphs. Quadratic equations and inequalities are solved and graphed.	500 to 540 ACT: 18-21 Accpl: 55-74 EA	MAT 101: Intermediate Algebra - includes real number system, higher degree equations and inequalities, functions and inverses, curve sketching, exponential and log functions, and analytical geometry	500 to 540 Accpl: 70-84 EA and less than 63 CL	MAT 102 for extended instructional time or MAT 100: Intermediate Algebra including solutions to linear equations and inequalities, polynomials, quadratic equations, exponential equations graphing, rational and radical expressions, and functions	500-540 ACT: 18-21 Accpl: 70-84 EA	MAT 100: Intermediate Mathematics. Polynomials and rational expressions; algebraic techniques including solution of first and second degree equations and inequalities; solution of systems of equations and inequalities; graphing of linear equations and applications; exponential functions and logarithms	Accpl: 54-66 EA	Intermediate Algebra
D (Proficient – Ready for 1st Gen Ed Course)	550 to 590	Math or statistics courses with MATH 101 as prerequisite. Courses may be determined by requirements of chosen major.	550 to 590 ACT: 22 to 23 Accpl: at least 75 EA and below 60 CL	Math course with MAT 101 prerequisite. Include LAC Tier I courses 130, 135, 139, and the LAC Tier II course 216. Courses may be determined by requirements of chosen major.	550 and above Accpl: 85 EA or above -or- 70-84 EA and 63-85 CL	Math course with MAT 100/102 as prerequisite, including MAT 103, 105, 107, 108, 120 and 122. Courses may be determined by requirements of chosen major.	550-590 ACT: 22-23 Accpl: 85 EA or above	MAT 110, 113, 118, 127, 120, 133 and 170 and any other general education math course for which MAT 100 is the only prerequisite	550 or above Accpl: 67 EA or above and 40 CL for some courses	Depending on score, students are placed in courses above intermediate algebra
E	600 and above Requires high school pre-calculus or calculus with grade B or better	Math or statistics courses with MATH 101 or 119 as prerequisite, which may be determined by requirements of chosen major.	600 and above ACT: 24 - 36 Accpl: at least 75 EA and at least 60 CL	Math course with MAT 101 prerequisite. These include the LAC Tier I math courses 130, 135, 139, 243, and the LAC Tier II math course 216. Degree program of study determines specific course	600 and above and grade B in HS pre-calc or calc including trig. Accpl: 86 CL or higher	Math course with MAT 100/102 or MAT 120 (College Algebra) or 122 (Pre-calculus) as prerequisite. Include MAT 103, 105, 107, 108, 120, 122, 139, 150, 178, and 221. Course may be determined by requirements of chosen major.	600 and above ACT: 24-36 Accpl: 85 EA or higher and a grade of B in HS precalc course	MAT 110, 113, 118, 127, 120, 133, 165, 170 and 181 or any general education math courses for which MAT 100 or MAT 133 is a prerequisite.		
F	AP exam credit for Calculus AB (equivalent to MATH 152)	Math or statistics courses with MATH 101, or MATH 119, or MATH 152 as prerequisite, which may be determined by the requirements of chosen major	AP Calculus score of 3 or higher	Will receive credit for MAT 243: Calculus I. Additional math courses as required by chosen major.	AP Calculus	A 3 or above on the AB-portion of exam gives 4 credits for Calc. 1. A 4 or above on the BC-portion gives 8 credits for Calc. 1 and 2	AP Calculus for a 3 or higher on the AP Calculus AB test	A score of 3 or higher in the AB portion of the exam gives four credit hours towards Calculus I MAT 181		

¹ Transfer students and students who wish to retest are offered the traditional Accuplacer test. The recommended choice of courses once proficiency is reached depends on the specific intended major

Expectations for High School Preparation

The CSUS Committee of Mathematics Chairs deliberated on the different aspects of P-12 preparation to ensure readiness for college level courses upon high school graduation. The Committee submits the following general recommendations:

- Ensure that P-12 students experience a continuum of preparation in mathematics, particularly in the transition points between middle and high school and between high school and college
- Emphasize learning of mathematics content in middle school that prepares students to succeed in Algebra (e.g. fractions and measurement)
- Provide a high school algebra curriculum that uses a *functional approach* that goes beyond the mechanical manipulations to the understanding of the relationships between variables, graphical representations and modeling
- Create an expectation that students take an Algebra intensive mathematics course (or higher) in the senior year of high school
- Expand programs in low performing schools that support the transition of students who have fallen behind to take rigorous mathematics courses, culminating in a minimum of Algebra II in the senior year of high school

The Committee recognizes that the critical mathematics alignment between high school and college should be reflected in the Algebra II course in high school. The Committee endorses the enclosed document “Algebra 2: A Functional Approach”, produced by the Connecticut Mathematics Alignment and Transition (MAT) Council (Appendix 1. Note: The resources cited in at the end of this report are available on the web at <https://ctalgebra2.wikispaces.com/>). The content is divided into two parts, a core section titled Minimal Course Topics and a set of more advanced topics titled Extensions. The Committee adopts the learning outcomes in the document and considers the full range of topics listed as the *most desirable learning for Algebra II in Connecticut high schools*.

Next Steps

During the 2009-10 academic year the CSUS Committee of Mathematics Chairs will continue work on the following areas:

- Continue the review and update of proficiency and placement approaches, the structure of remedial and developmental courses, and the content of this statement as necessary. *Timeline and deliverable: Updated Proficiency and Placement Scheme chart no later than April 30, 2010.*
- Completion of a set of common mathematics courses across the CSUS. *Timeline and Deliverable: A set of common courses by October 1, 2009 and continued review as needed during the academic year.*
- Review of equivalencies between CT Community College courses to lower division courses at the CSUS universities, including the list of common courses above. *Timeline and deliverable: A set of course equivalencies with the community colleges by December 12, 2009*

Membership of the CSUS Committee of Mathematics Chairs

Dr. Jeffrey K. McGowan, Professor and Chair – Department of Mathematical Sciences, CCSU

Dr. Mizan R. Khan, Professor and Chair – Department of Mathematics, ECSU

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