

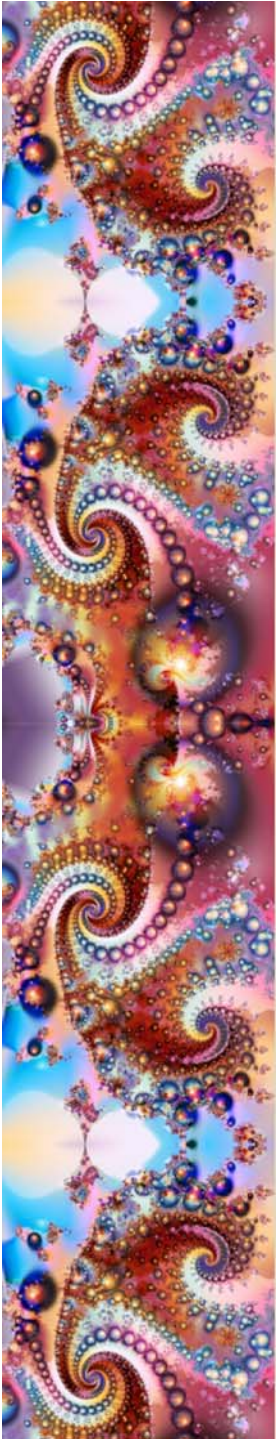
**To the  
Council of Deans...**

**The Math Issues  
Committee  
thanks you for  
welcoming us.**



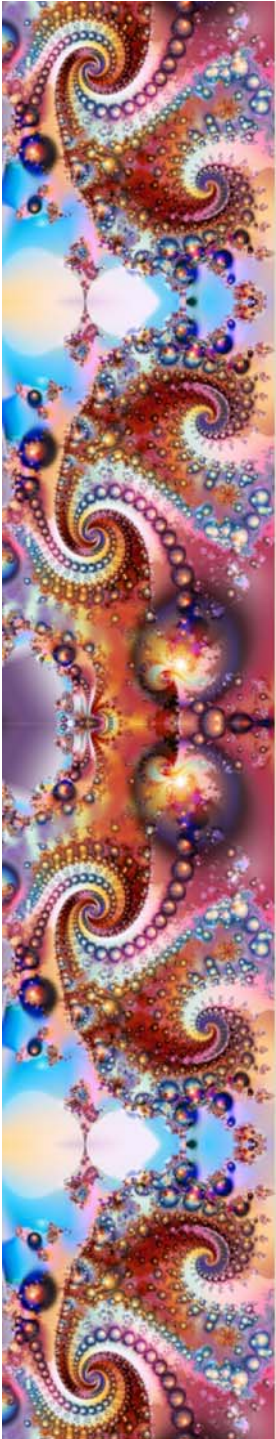
# Agenda

- 1. Introduction: Math Issues Committee**  
— Miguel Garcia
- 2. Special Act No. 07-7**  
— Pat Hirschy
- 3. College initiatives for student support and success**  
— Teresa Foley
- 4. Next steps**  
— Elaine Dinto  
— Pat Hirschy



# **1. Introduction: Math Issues Committee**

- **Our origin – system-wide Mathematics Common Numbering Committee**
- **Expansion of goals to include other issues of interest / concern system-wide**



## **Our Steering Committee**

**Pat Hirschy, Miguel Garcia, Elaine Dinto**

## **Our Campus Representatives**

**Asnuntuck – Teresa Foley**

**Capital – André Freeman**

**Gateway – Rachael Schettenhelm**

**Housatonic – Mark Leach**

**Manchester – Paul Edelen**

**Middlesex – Pam Frost**

**Naugatuck Valley – Elaine Dinto**

**Northwestern – Sal Maimone**

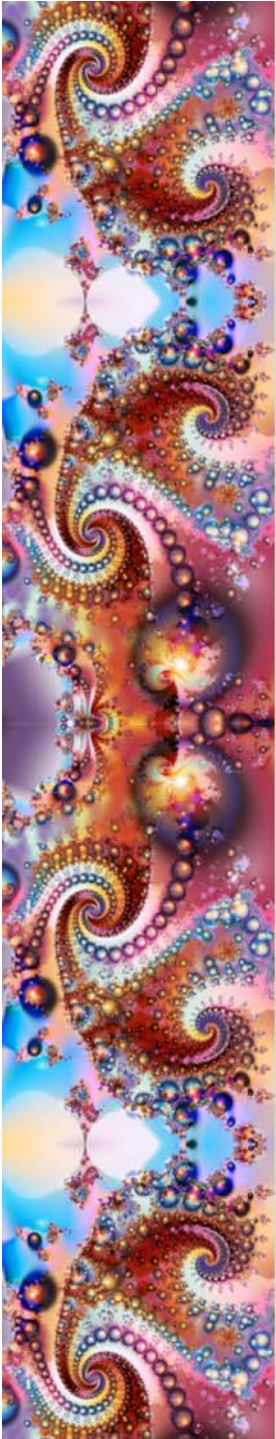
**Norwalk – Helen Cloherty**

**Quinebaug Valley – Joachim Bullacher**

**Three Rivers – Larissa Alikhanova**

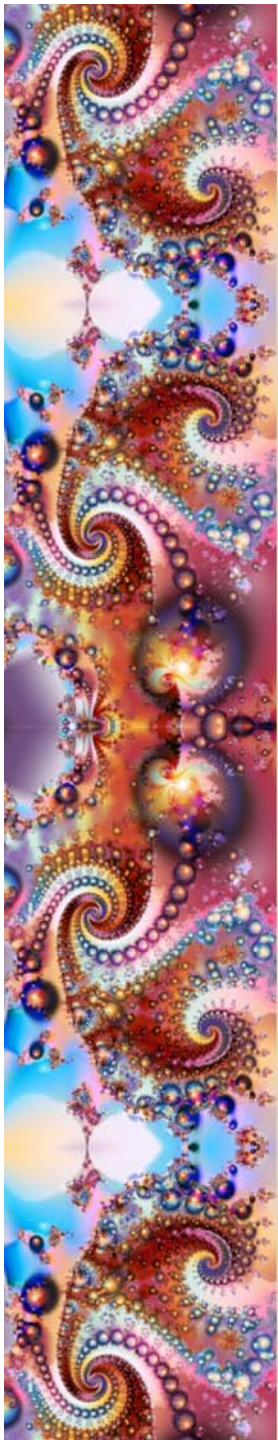
**Tunxis – Sue Ricciuti**





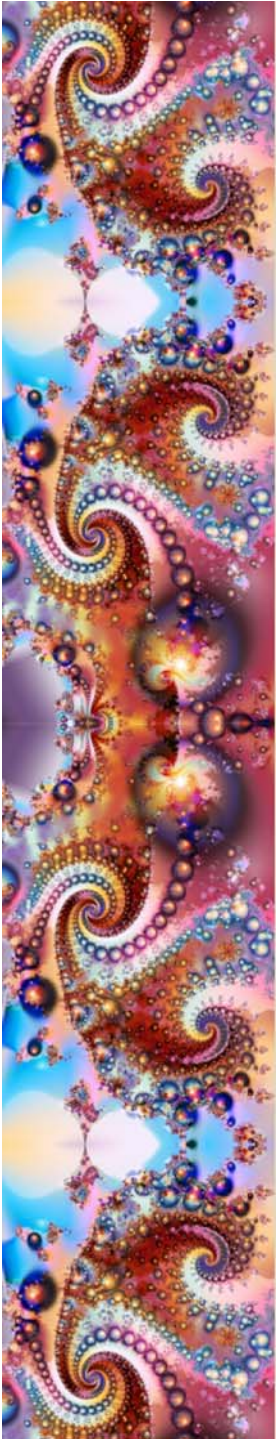
**2. Substitute Senate Bill No. 1318,  
Special Act No. 07-7: An Act  
Concerning Public Institution of  
Higher Education System Transfer  
and Articulation Process**

**<http://www.cga.ct.gov/2007/ACT/SA/2007SA-00007-R00SB-01318-SA.htm>**



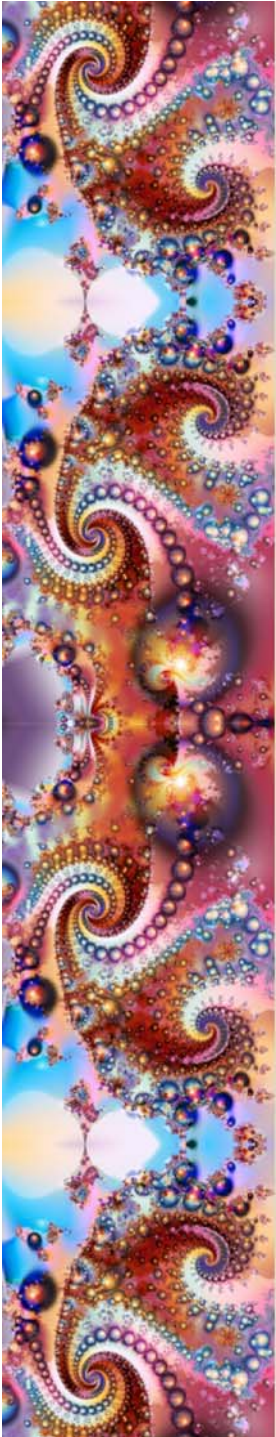
## **Response to the legislation: Math Issues Intermediate Algebra Plan**

- **Changes to policies and procedures have been implemented**
- **Assessment is needed to provide direction**



### **3. College initiatives for student support and success**

- **College and course initiatives**
- **Individual member reports**
  - **Teresa Foley**
  - **André Freeman**
  - **Pam Frost**
  - **Rachael Schettenhelm**
  - **Paul Edelen**



## **4. Next steps: Enhancing the Placement Process**

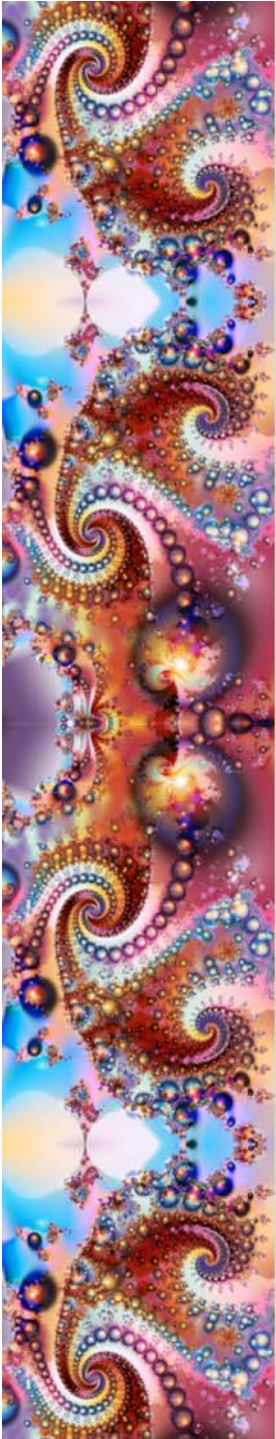
### **AMATYC Position Statement**

**Recommendations regarding initial placement of two-year college students into the mathematics curriculum —**

- **Consider prerequisite knowledge and educational goals**
- **Employ college participation**
- **Include multiple measures**
- **Assess practices regularly**
- **Ensure student opportunity to achieve success**

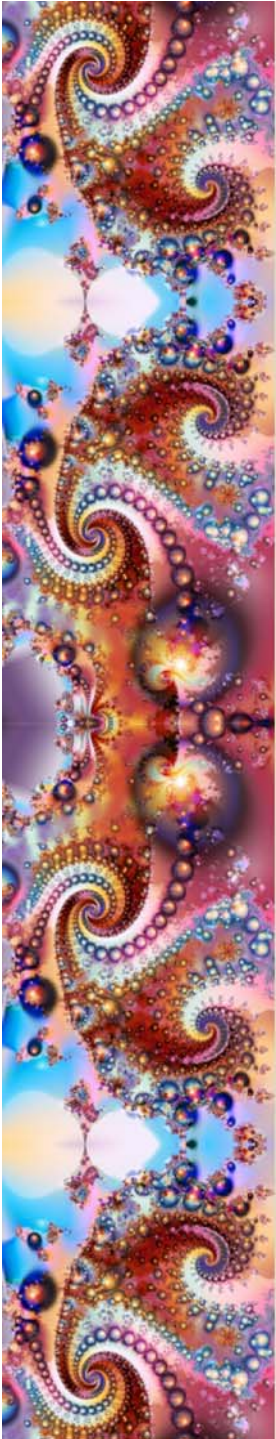
**<http://www.amatyc.org/documents/Guidelines-Position/Placement.htm>**





## **Next steps: Assessing placement and course initiatives**

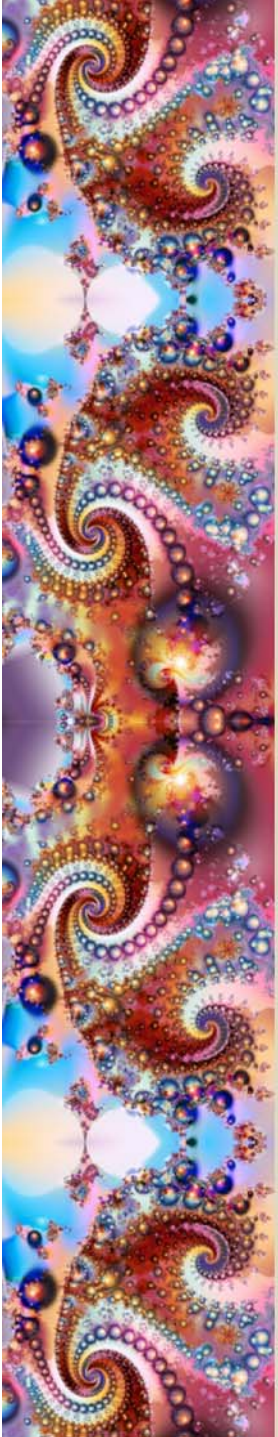
- **Need for more efficient placement procedures**
  - **Financial benefit to students and college**
  - **Save students time**
  - **Improve student success**
- **System would benefit from a unified approach**

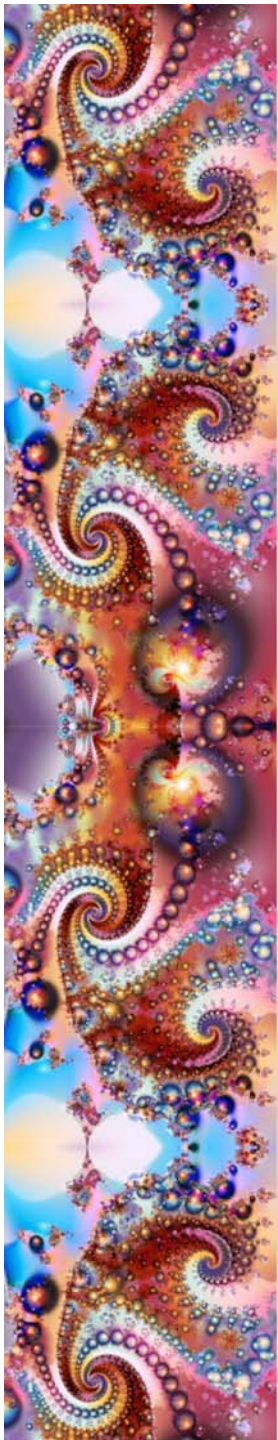


## **Next steps: Assessing placement and course initiatives**

- **Math Issues Committee is interested in pursuing this matter**
- **Need assistance / resources**
  - **Need to assess placement**
  - **Need to assess course initiatives**
  - **Need a mechanism for continually updating the common numbering scheme**

# Questions





**To the members of the  
Council of Deans —**

**The Math Issues  
Committee  
wishes to thank you  
again for your  
time and  
consideration.**





**Substitute Senate Bill No. 1318**

**Special Act No. 07-7**

**AN ACT CONCERNING PUBLIC INSTITUTION OF HIGHER EDUCATION SYSTEM TRANSFER AND ARTICULATION PROCESS.**

Be it enacted by the Senate and House of Representatives in General Assembly convened:

Section 1. (*Effective July 1, 2007*) The Department of Higher Education, in consultation with the constituent units of the state system of higher education, shall review the status and content of public institution of higher education system transfer and articulation agreements. Such review shall consider: (1) The sufficiency of the agreements, including any agreements modified or made on or after July 1, 2007, (A) to ensure appropriate credit transfer against degree requirements within each constituent unit, and (B) to ensure appropriate credit transfer against degree requirements across the constituents units and identify any disparities between the transfer of credits from the same or similar program from different colleges or universities of a constituent unit to a college or university of the same or of another constituent unit, (2) (A) the status or completion of common course numbering within the community-technical college system, and (B) a plan to implement common course numbering within the Connecticut State University system, and (3) 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. Not later than January 1, 2008, the Commissioner of Higher Education shall report the findings of the review to the joint standing committee of the General Assembly having cognizance of matters relating to higher education and workforce advancement in accordance with the provisions of section 11-4a of the general statutes.

Approved June 11, 2007

## Mathematics Initiatives at Connecticut Community Colleges

Council of Deans

March 11, 2011

Gateway Community College

### Asnuntuck

Asnuntuck has three main initiatives in mathematics: math workshops for students preparing to take Accuplacer, Accelerating Success in Mathematics for student required to repeat MAT 095, and *MyMathLab* homework support. Math workshops are offered during the winter intersession and summer to help incoming students brush up on their math skills prior to taking *Accuplacer*. Accelerating Success in Mathematics focuses on students who are required to repeat MAT 095 before they are allowed to move onto the next mathematics course in their respective programs. Students work with a computer instructional program, *ModuMath*, to identify areas of weakness and then work through assigned lessons and assessments to master required concepts and skills. After completing the *ModuMath* program, students retake *Accuplacer* to determine whether they place out of MAT 095. Finally, *MyMathLab* is used to provide students with supplemental instruction and guided homework in MAT 075, 095, and 137.

### Capital

Capital has three main initiatives underway in mathematics: Statway, Accelerated Mathematics Courses (MAT 097 and 139), and *MyMathLab* Supplemental Instruction (MAT 075, 095, and 137). The Statway initiative provides an accelerated pathway for developmental math students to complete transfer-level statistics in a single year. Statway is intended for students interested in non-STEM (Science, Technology, Engineering, and Math) majors and careers in the social sciences or humanities. Statway consists of two semester courses that draw on learning theory and cognitive science, as well as practical, real-life situations, and will be taught in a learning environment where students learn by doing, communicating mathematical and statistical thinking, and employing technology to explore and strengthen their understanding of key concepts. Capital also offers Accelerated Mathematics Courses (MAT 096 – Pre-algebra and Elementary Algebra and MAT 139 – Elementary and Intermediate Algebra) for students who benefit from learning at a faster pace. Finally, all students enrolled in MAT 075, 095 and 137 are required to complete online homework through *MyMathLab* Supplemental Instruction which offers students multimedia online resources to help students strengthen their mathematical understanding and increase their engagement with the course material.

### Gateway

Gateway is offering a number of initiatives that focus on accelerating high performing mathematics students through the curriculum, standardizing the curriculum across instructors,

and Statway. Gateway students have the option of accelerating through the math sequence by taking a combined MAT 075 and 095 in one semester. Students who earn a B or better in MAT 137 are allowed to skip College Algebra (MAT 172) and go directly to a 4-credit Pre-calculus (MAT 186) course. Courses from MAT 075 to 137 are being standardized with common final exams and syllabi. Faculty facilitators have been assigned for each course. In addition, a drop-in tutoring center is available to students and is staffed by instructors. Gateway is also incorporating *MyMathLab* in both MAT 075 and 095. *Mathematica* has been purchased for instructors use in the Math/Science Department. Finally, Gateway is a Statway campus and will be implementing Statway I and II courses soon.

### Housatonic

Housatonic offers a number of mathematics initiatives that focus on accelerating students through the developmental curriculum by offering Open Entry/Open Exit (OE/OE) courses, using a combined textbook in MAT 095 and 137, and Statway. The OE/OE math courses are self-paced and allow students to progress through Math 075, 095, and/or 137 curricula in one or more semesters using computer assisted instruction. Housatonic also uses a combined textbook for MAT 095 and 137 which helps students both financially and academically as they are able to readily reference content or skills they need to strengthen. Finally, Housatonic is a Statway campus and will offer Statway I and II for students who are pursuing non-STEM majors.

### Manchester

Manchester has two main math initiatives taking place: math redesign for students taking developmental math and the implementation of a college algebra course. The math redesign initiative, being piloted during the Spring of 2011, utilizes the emporium model coupled with computer based instruction and a dedicated mathematics computer laboratory to deliver self-paced, modularized, mastery based courses for the entire developmental mathematics sequence. The pilot will compare student success with the emporium model and traditional classroom mode of delivery. Another Manchester initiative is a new college algebra course that will better prepare students for the rigorous higher mathematics curriculum found in pre-calculus and the calculus sequence.

### Middlesex

Middlesex has a number of initiatives underway that offer students choices related to the mode of instruction: traditional on-ground, self-paced with computer assisted instruction, and online instruction. At the developmental level, students have the option of taking MAT 075 and 095 in a traditional on-ground format or self-paced in a computer lab using an emporium model. Middlesex also offers both traditional and online math courses for MAT 137, 168, and 173. Both the self-paced and online math classes use *MyMathLab* extensively. Some traditional format classes use it for online homework and the supplemental instructional aides it offers. Middlesex

also participates in the Annual Math Contest offered by MATYCONN and is in the process of developing a student Math Club.

### Naugatuck Valley

Naugatuck Valley's math initiatives include the development of Statway and implementing a self-paced, mastery based developmental math course. Their Statway team has been piloting Carnegie/Dana Center lessons throughout this academic year, meeting weekly and providing considerable feedback to Carnegie on a regular basis. The discovery-based lessons, which include much group work and discussion, are favorably received by students; faculty are closely watching the learning process unfold and are very excited! Naugatuck Valley's self-paced, mastery-based MAT 075 and 095 course, piloted over the winter session, is being offered this spring. Based on students' performance on quizzes administered in *MyMathLab*, students are assigned to work on skills and topics not yet mastered. Classes are limited to 24 students and have a faculty member plus two assistants; students can finish both courses in one semester or take up to two semesters to finish one course.

### Northwestern

Northwestern's math initiatives include offering a 6-credit developmental course, the use of embedded tutors, and providing a Math Summit for area high schools interested in developing an articulation agreement. Northwestern offers MAT 085 as a 6-credit course that combines MAT 075 and 095 into one semester and serves the majority of their developmental math students. Embedded tutors are also provided in a number of Northwestern's math courses to help strengthen students' math skills. Finally, Northwestern initiated a Math Summit for high schools in their service area to ensure that College Career Pathways courses are articulated accurately.

### Norwalk

Norwalk's math initiatives focus on offering a combined Elementary and Intermediate Algebra course and weekly recitations for all math courses above MAT 136. A combined MAT 094 and 136 course is offered for students who wish to progress through the algebra curriculum in one semester. Through the "Achieving the Dream" initiative, Norwalk offers recitation sessions for each of its credit level math courses in which students can receive an hour of additional instruction as part of a group or through individual instruction. Norwalk is collecting statistics to determine the overall effectiveness of the recitations compared to previous semesters. Norwalk also utilizes course coordinators who provide weekly communication with course faculty related to suggested timing and homework for a course.



## Quinebaug Valley

Quinebaug Valley offers a number of math initiatives that focus on incorporating tutors, utilizing computer technology, and offering hybrid courses as part of the math curriculum. In an effort to improve students' mathematical learning, Quinebaug Valley is piloting the use of embedded tutors in three sections of MAT 095 during the spring of 2011. With an eye on students' financial matters the Math Department uses a combined textbook for MAT 095 and 137 that also provides students with a valuable resource to review prerequisite skills as needed. *MyMathLab* is used in MAT 095 and 137 to provide students with supplemental instruction and online homework assistance as needed. MAT 095 has been offered as a hybrid course since the Fall of 2010, and MAT 137 will be offered in a hybrid format starting in the Fall of 2011.

## Three Rivers

One Three Rivers math initiative is MAT 090 Math Pathways, a new course that has modularized the math concepts and skills needed to succeed in college level math courses. Students may test out of each module as they are able, eliminating students' need to sit through lectures on what they already know. By mastering each module before they move on to the next, students reduce the redundancy of content between math courses. Students may take between 1 and 3 semesters to complete the modules. Modules may be added at lower levels as needed to accommodate the needs of students who place below pre-algebra. Another initiative at TRCC provides MAT 075 students with instruction in effective learning/study strategies, increases their awareness of tutoring services on campus, and incorporates presentations from transfer counselors on math requirements for transfer institutions and career services on how math is used in various career paths. Three Rivers also offers self-paced sections of MAT 075 and 095 that provide students with a combination of computer instruction and individualized tutoring as they progress through the curriculum on an individual basis.

## Tunxis

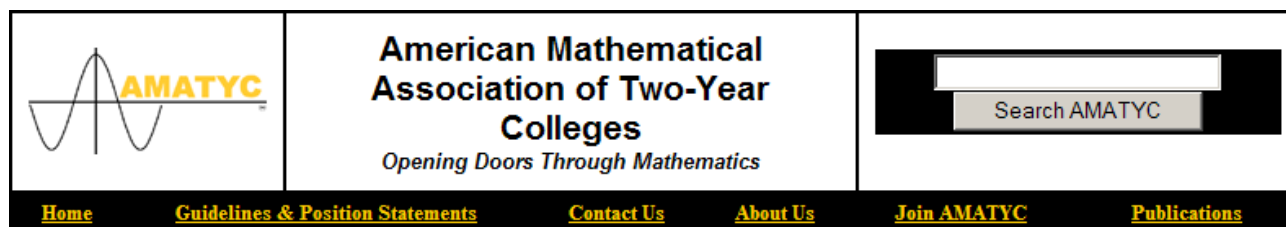
Tunxis offers a number of math initiatives that include offering a combined course; workshops for elementary algebra; the use of online learning aids; offering traditional, online and hybrid courses; and providing supplemental instructors for classes that meet in the computer lab one day a week. During the summer or fall of 2011, Tunxis will pilot a combination course for MAT 095 and 137 for highly motivated students. Through the Academic Support Center Tunxis offers workshops for students enrolled in Elementary Algebra to strengthen their math skills and better prepare them for the semester ahead. A number of courses also use *MyMathLab* to provide students with supplemental instruction and online homework assistance. Tunxis also offers math courses in hybrid and online formats as well as the traditional format. Tunxis is piloting the use of supplemental instructors for courses that meet 2-days a week in the classroom and 1-day in the computer lab. Finally, Tunxis is interested in purchasing a classroom set of laptops that can be used as a portable lab.

03/11/11

**Progress on the Math Issues Committee proposed plan for Intermediate Algebra**

| Action   | Status   |
|--|--|
| <p>1. Math Issues Representatives will bring feedback/concerns from our colleges to Math Issues meetings regarding the four proposals which resulted from the discussions on Intermediate Algebra Placement.</p> <ul style="list-style-type: none"><li>• <b>All colleges will start Accuplacer with the Elementary Algebra (EA) subtest.</b> An Arithmetic (AR) score should be available adaptively for students placing below Elementary Algebra.</li><li>• <b>To place into Intermediate Algebra</b>, the entering Elementary Algebra (EA) sub-test score is between 54 and 66, system-wide.</li><li>• <b>To place out of Intermediate Algebra</b> requires a score of 40 or higher in the College Level Math (CLM) sub-test of Accuplacer. This score will place students into some, but not all, courses above Intermediate Algebra in the system.</li><li>• <b>Alternative ways of placing out of Intermediate Algebra</b> include a score of 550 or higher in the math portion of the SAT or an ACT score of 22 or higher. This score will place students into some, but not all, courses above Intermediate Algebra in the system.</li></ul> | Sub-test and cut-off policies have been implemented at all 12 colleges; degree of impact varies; some assessment has been conducted but more needs to be done. |
| <p>2. With assistance from campus Institutional Research, we propose that colleges affected by the proposed changes in the placement testing procedure do a simulation in spring 2008 to test the impact of the changes, i.e., determine the number of students who would be placed higher or lower if EA is used first and our proposed Accuplacer band is implemented. This data will impact directly on college scheduling and staffing needs.</p>  | Completed.   |
| <p>3. We will identify common student learning outcomes for Elementary Algebra and Intermediate Algebra.</p>   | Completed.   |
| <p>4. With facilitation from the System, Math Issues will initiate a dialogue with College Board in order to assess alignment between the Accuplacer and our student learning outcomes.</p>  | To be addressed.   |
| <p>5. We will investigate alternative assessment tools in addition to Accuplacer results and SAT mathematics scores to use in the placement process, such as CAPT scores, Credit by Exam scores, high school grades, and high school math courses successfully completed.</p>  | ACT cut-off score recommendations submitted to Central Office, awaiting System approval; other tools still to be addressed.                                    |
| <p>6. We will continue communication with MATYCONN, Math Basic Skills, CSU and UConn math faculty. (Note: MATYCONN is the Connecticut chapter of the American Mathematical Association of Two-Year Colleges, AMATYC. Math Basic Skills comprises CCC, CSU, and UConn.)</p>   | Ongoing. MATYCONN meets each semester, and Math Basic Skills meets monthly following Math Issues.  |
| <p>7. We will identify approaches to make placement testing more effective. This will include investigating ways to refresh student algebra skills prior to taking Accuplacer, considering programs such as Accuplacer A+ and Western CT State University's Bridges Program and the work of the MAT Council, and implementing AMATYC's position statement regarding mathematics placement in order to provide a more holistic approach to placement.</p>   | In progress; needs continual study/review.   |
| <p>8. We will explore ways to disseminate information about "combination courses" and other innovations developed at sister colleges.</p>  | To be addressed.   |

More specific information is detailed in Math Issues minutes available at [www.matyconn.org](http://www.matyconn.org).



## **AMATYC POSITION STATEMENT ON INITIAL PLACEMENT OF TWO-YEAR COLLEGE STUDENTS INTO THE MATHEMATICS CURRICULUM**

AMATYC recommends that all two-year colleges develop procedures for the initial placement of two-year college students into the mathematics curriculum. The placement process should determine the highest level of mathematics appropriate to students' educational goals at which they have the prerequisite knowledge to be successful. The criteria used to determine mathematics placement should be based on the goals of the mathematics program. *Crossroads in Mathematics: Standards for Introductory College Mathematics Before Calculus* states that placement tests should provide a measure of students' abilities not only to show mastery of algorithmic skills but also to think critically and solve problems (AMATYC, 1995).

A college placement team, led by faculty from the mathematics department, should develop policies and procedures to be used for the placement of all two-year college students entering the mathematics curriculum. These procedures should be applied equitably to all students and use an analysis of multiple measures, which may include:

- High school and college records
- Scores on college entrance examinations
- Scores on placement tests

In addition, student success can be impacted by less quantifiable factors such as motivation; family and work obligations; special student needs; and educational, career, and personal goals. These may also be factors to consider. In all cases, the placement team should make the final decision regarding placement based on an analysis of multiple measures.

All those involved in the testing, advising, and placement of students into the mathematics curriculum should be well versed in the elements of the program. Appropriate staff, facilities, and equipment are essential to the success of the program. It is the responsibility of the college to advise students on policies, procedures, and implications of the placement program prior to enrollment. Opportunities to prepare for the placement test should be provided by the college, and information regarding these opportunities should be disseminated to all students prior to placement testing.

Evaluation of the placement process should be ongoing. Colleges should validate their placement tests and procedures used for initial placement into the mathematics curriculum. Colleges must continually assess placement procedures as content, pedagogy, and technological changes occur which affect the community college mathematics curriculum. Placement procedures must not be used to restrict access to a college education, but rather to ensure that all students who enroll in a mathematics course have the opportunity to achieve success.