I. Current state of MAT 095 in Fall 2013

SAT data, Fall 2013 Freshman cohort as of August 19, 2013 (N = 1330)

<table>
<thead>
<tr>
<th>SAT Math</th>
<th>N</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>200-249</td>
<td>3</td>
<td>0.2%</td>
</tr>
<tr>
<td>250-299</td>
<td>9</td>
<td>0.7%</td>
</tr>
<tr>
<td>300-349</td>
<td>61</td>
<td>4.7%</td>
</tr>
<tr>
<td>350-399</td>
<td>149</td>
<td>11.4%</td>
</tr>
<tr>
<td>400-449</td>
<td>334</td>
<td>25.7%</td>
</tr>
<tr>
<td>450-499</td>
<td>328</td>
<td>25.2%</td>
</tr>
<tr>
<td>500-549</td>
<td>231</td>
<td>17.7%</td>
</tr>
<tr>
<td>550-599</td>
<td>119</td>
<td>9.1%</td>
</tr>
<tr>
<td>600-649</td>
<td>52</td>
<td>4.0%</td>
</tr>
<tr>
<td>650-699</td>
<td>14</td>
<td>1.1%</td>
</tr>
<tr>
<td>700-749</td>
<td>1</td>
<td>0.08%</td>
</tr>
<tr>
<td>750-800</td>
<td>1</td>
<td>0.08%</td>
</tr>
</tbody>
</table>

Note that students with an SAT math score below 450 are placed into MAT 095, which accounts for approximately 42.7% of our incoming freshmen class. About 25.7% of this freshman class are at the upper end of the MAT 095 placement with SAT math scores between 400 and 449.

The group of students with SAT math scores below 320 are of particular concern. Rick Riccardi provided us with data for the freshman cohort of Fall 2010 and Fall 2011 who had SAT math scores 400 or lower (N = 438), and we analyzed the overall retention rate of these students (i.e. whether or not they are still registered as a matriculated student in Fall 2013) and also analyzed their pass rate the first time that they took MAT 095. The percentage of this group of students that are no longer taking courses at SCSU is 45.89%. If we narrow the data to just those students with an SAT math score between 200 and 320, we find that 66.66% of those students have not been retained. If we look further at this population to see what percentage of this latter group students passed MAT 095 the first time they took it, we find that 50% of them received an F or W in the course. Contrast this with the entire MAT 095 population in the Fall of 2011, when the percentage of students earning an F or W was 26.65%. Thus, students with an SAT score between 200 and 320 are not being retained at the same rate as other students that place into MAT 095, and they are more at risk for failure.

SAT data from freshman cohort Fall 2010 and Fall 2011

<table>
<thead>
<tr>
<th>SAT-M 400 or below</th>
<th>Percent of students no longer enrolled in Fall 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAT-M 200 - 320</td>
<td>66.66%</td>
</tr>
</tbody>
</table>
Percent of students earning an F or W in MAT 095

<table>
<thead>
<tr>
<th></th>
<th>Percent of students earning an F or W in MAT 095</th>
</tr>
</thead>
<tbody>
<tr>
<td>All MAT 095 students in Fall 2011</td>
<td>26.65%</td>
</tr>
<tr>
<td>Freshmen with SAT-M 200 - 320</td>
<td>50.00%</td>
</tr>
</tbody>
</table>

**Proficiency policy**

The proficiency policy stated below (in italics) is copied from our website: [http://www.southernct.edu/student-life/academic-success/academic-advisement/placement/proficiency-policy.html](http://www.southernct.edu/student-life/academic-success/academic-advisement/placement/proficiency-policy.html). According to several sources including Academic Advisement and department chairs at the other CSUs, we are the only CSU that does not enforce this policy. In addition, while we can track incoming freshmen as to their status with regard to this policy, we currently do not have a method for informing transfer students about their mathematics placement level when they are admitted to the university, and thus, we do not currently know how many of our transfer students need to take MAT 095.

*Beginning Fall 2004, any entering student who places into the non-credit bearing courses Elementary Algebra, MAT 095 and/or Tutorial English in Basic English, ENG 097, must complete those courses within the first 24 attempted credits of university course work.*

*Any student who finds that s/he must take one or both of these courses will be required to sign a contract at registration stating his/her intent to meet this proficiency requirement.*

*If a student fails to complete these courses within 24 credits of course work, s/he will not be allowed to register for courses at any Connecticut State University institution.*

*This policy reflects a resolution passed by the Board of Trustees for the Connecticut State University System on July 16, 2003.*

II. **Alternate models being used at other schools**

The emporium model is being used at a number of schools across the country. This fall, we visited two sites in Connecticut (WCSU and UNH), attended a webinar to see how another large state university has redesigned both placement and developmental mathematics (Kent State University), and invited Karen Santoro from CCSU to campus to present the course materials that she has developed.

- **WCSU emporium**
  
  This fall, WCSU opened a new emporium classroom consisting of a large converted space that has 90 computers, a variety of white boards and SMART boards along the walls, and a configuration that allows for both traditional classroom teaching and small group work. They ran one pilot course in the emporium this fall, and plan to expand in the spring, with a future goal of having all students that place at our MAT 095 or 102 level taking their developmental math in this room. Some features of the course include supported, self-paced learning using a detailed workbook (created by faculty at WCSU) as a guide, as well as the ability to complete both courses in one semester. The emporium is staffed by a faculty member and student tutor, with a student/mentor ratio of 15 to 1.

- **UNH emporium**
  
  The University of New Haven also opened a new emporium classroom this fall in a new building that was built for this purpose. The space consists of 60 computers and small classroom spaces for meetings and small group. All students taking developmental
math, college algebra, and precalculus take their courses in the emporium, courses are self-paced, and students have the ability to complete multiple courses in a semester. The emporium is staffed by faculty members and student tutors, with a student/mentor ratio of 10 to 1.

• CCSU blackboard course
As part of the CAG grant last year, Karen Santoro (from CCSU) created a module-based Blackboard course consisting of MAT 095 content. In the summer of 2013, all incoming freshmen at CCSU that placed into MAT 095 were automatically registered into this “course” and received information about how to use these free modules in order to review the content. In addition, students had the opportunity to come to campus to work through the modules with a faculty member who could answer their questions during a 3-week session in the summer. Students could take Accuplacer after using these materials in order to challenge their SAT placement, and students that took the 3-week course could place out of MAT 095 by taking a comprehensive final exam at the end of the course. A majority of the students that completed the 3-week course placed out of MAT 095.

• Kent State model
Kent State University has recently adopted the McGraw-Hill ALEKS software system for mathematics placement and for developmental mathematics taught in the emporium classroom. They have seen more effective and accurate placement using this model and course outcomes have been improved.

• Further reading about course redesign using an emporium model
The National Center for Academic Transformation (NCAT):
http://www.then-cat.org/RedMathematics.htm

III. Recommendations for AY 2014/2015

• Freshmen Orientation/Summer 2014
Using the Fall 2013 SAT data, we estimate that approximately 560 incoming freshmen will place into MAT 095. In order to reduce the number of freshmen that need to take MAT 095 in the Fall of 2014, we recommend the following interventions for this population of students.

○ Blackboard course: When students accept their admission into the university, all freshmen that place into MAT 095 shall be given access to the Blackboard materials created by Karen Santoro. These materials are free and Karen has given her permission to make them to our students. These students will receive a separate mailing from Academic Advisement or the Registrar's Office containing information about the MAT 095 curriculum, how to use the modules in this course, and about the Accuplacer exam.

○ Required placement tests: These students will be required to take a math placement exam and will be strongly encouraged to do so prior to NSO. Placement dates will be scheduled in April and May; students that take the placement exam during these months will receive a fall schedule at NSO. If resources allow, a small number of computers for placement testing could be set up in the Wintergreen building in order to allow a small number of students to make individual appointments for placement testing (for example, students that come from out-of-state). Students that have not taken the placement exam prior to NSO will be required to take it there, and these students will not receive their schedule until later
in the summer. The receipt of their schedule is the incentive for taking the placement exam early. Any student that wishes to retest during NSO will be given that opportunity.

- **Challenge based on senior year math course:** Any entering freshmen that are taking a high school mathematics class during their senior year at the Precalculus level or higher can bring their high school transcript to the math department chair to "challenge" their placement by SAT. The students that wish to challenge will meet with the math department chair during NSO (possibly at the same time that students are able to challenge their English placement).

- **Options for Summer work:** Students that do not place out of MAT 095 via one of the methods described above shall be strongly encouraged to take a traditional MAT 095 course or one of the self-paced courses (described below).

- **MAT 095 summer sections:** The Mathematics department will offer at least two sections of traditional MAT 095 during the summer B session. We will also offer accelerated 3-week self-paced courses throughout July and August in which students can complete the modules in the Blackboard course with assistance from a faculty member and student tutor. These 3-week sessions will be offered in a computer classroom using the emporium model. Offering these courses during different 3-week sessions will allow students to choose a time that fits their summer schedule and allows them to work around their vacation plans.

- **Reduced tuition rate for summer MAT 095:** In order to provide students with incentive for taking the MAT 095 course here, we recommend that the university provide these courses at a reduced rate in order to make the cost competitive with the community colleges. In particular, in EN B221, we can increase the enrollment cap in the self-paced courses to 30 students per course, staffed by one faculty member and one student worker. Benefits to the university include data from this “pilot” study of the emporium model as well as a cost savings in the number of MAT 095 sections that will run in the fall. Hopefully, many of these students will place into MAT 100/102 in the fall, which have higher enrollment caps, so that fewer sections might be needed to accommodate the freshmen.

**Transfer student orientation/summer plan**

Transfer students present different issues, since some of them have taken mathematics courses at their previous college, but many of them do not know where to begin taking mathematics courses here. A significant number of transfer students have not taken any mathematics courses in college, and sometimes do not discover until their senior year that they need to begin with MAT 095. It is difficult to say how many of our continuing students currently need MAT 095, but in the Fall of 2013, we estimate that about 120 continuing students registered for MAT 095 sections. For transfer students, we make the following recommendations:

- All transfer students with MAT 0100 (math elective credit) on their transcript should be directed to the mathematics department chairperson, perhaps at transfer student orientation, but before registration for Fall classes.

- Any transfer student who has not taken mathematics courses prior to coming to SCSU shall be required to take Accuplacer before registering for classes for the first time. As with the incoming freshmen that place into MAT 095, these students should also be registered in the Blackboard course and sent a mailing about the content of the course, the Blackboard modules, and placement via Accuplacer.

- Transfer students that place into MAT 095 shall be given the option of registering at
SCSU during the summer with the same reduced price as the freshmen.

- Transfer students that are placed into MAT 095 upon matriculation shall be required to complete MAT 095 within their first 24 credits in the same way that incoming freshmen are held to this requirement (CSU-BOT resolution from 2004).

- **Fall 2014**
  It is our hope that the summer interventions described above will move some of the MAT 095 population into credit-bearing mathematics courses. However, we estimate that we will still need 22 sections of MAT 095 in the fall semester (reduced from 32 sections in the Fall of 2013). We would be willing to pilot some or all sections using the emporium model.
  - **Proposal 1:** If no computer classroom is available, we will teach traditional sections of MAT 095 in the fall.
  - **Proposal 2:** If a computer classroom can be made available for some limited amount of time, we can offer some sections of MAT 095 as self-paced emporium classes.
  - **Continuing students:** In Spring 2014, continuing students (who have accumulated 24 or more credits) who have not completed MAT 095 should be identified. These students should be notified that they must take MAT 095 by the end of the 2014-2015 academic year. These students should also be given the opportunity to take MAT 095 as a traditional or emporium course during Summer 2014 at the reduced rate for freshmen.

**IV. Long-term recommendations**

- **2014-2015**
  Summer interventions as described above. We will offer approximately 22 sections in Fall 2014, which is an overall reduction of 10 sections of MAT 095 from Fall 2013.

- **2015-2016**
  The goal this academic year is to reduce the number of MAT 095 sections to approximately 12 sections for Fall 2015.
  - **Freshmen:** Similar summer interventions as in 2014-2015, but this time, students that place into MAT 095 are accepted conditionally. These students must either place out of MAT 095 via one of the methods described above or shall be required to take a traditional MAT 095 course or one of the self-paced courses during the summer (at a reduced rate). Students that are unable to take the course at SCSU shall be required to enroll in an Elementary Algebra course at a college or university near their home. Students that do not register for MAT 095 over the summer shall not be admitted to the university in the Fall of 2015. Students that register for MAT 095 but are not able to pass it shall be registered for MAT 095 in the Fall.
  - **Transfer students:** Transfer students shall be required to determine their mathematics placement before registering for classes. Those students that place into MAT 095 shall be strongly encouraged to complete the course over the summer, and shall be required to take MAT 095 in their first semester at the university.
  - **Continuing students:** In Spring 2015, continuing students that still need MAT 095 (who have accumulated 24 or more credits) shall be notified that they must take MAT 095 over the summer or at another college. Students that do not complete this requirement shall not be allowed to register for classes at SCSU until they complete the course.
• **2016-2017**
  Our long-term goal is to combine the summer interventions with an emporium classroom model in which we will teach all sections of MAT 095 and 100. We are interested in exploring the Kent State model for this emporium, which would mean possibly switching from Accuplacer as a placement tool to the ALEKS placement exam. Some of the elements from other emporium models that we would like to include are as follows:
  ◦ Students register for 5 credit hours, faculty are assigned 5 load credits, and students earn a maximum of 3 credits.
  ◦ Students must attend the emporium at least 5 hours per week. Students must attend “class” for 3 hours with their faculty instructor and are required to attend another two hours of their choice.
  ◦ Students have the ability to complete both MAT 095 and MAT 100 content in one semester.
  ◦ Emporium is staffed by a faculty member and student workers. The ratio of developmental students to faculty/tutor is 15 to 1.
  ◦ If the emporium space is large enough to accommodate the number of students, then all students that place into MAT 095, 100, or 102 are required to take the emporium course. Note that under this model, we would phase out the MAT 102 placement, so that students would either start with MAT 095 material or MAT 100 material in the emporium.
  ◦ Should a student not complete the entire MAT 095 or 100 curriculum in the first semester, he/she will have the ability to pick up where they left off in the following semester. Avoidance of redundancy might help with the completion rate, and students will have the ability to learn material at their own pace.

V. **Resources and Required Collaborations**

• **Developmental Coordinator/Emporium Administrator**
  If we move to an emporium model for all developmental sections, a full-time faculty member will be needed to serve as coordinator.

• **Compensation for the department chair (or the chair's representative) for meeting with students during NSO and transfer orientation**
  This compensation should be commensurate with the compensation given to faculty for coming to campus to advise majors.

• **NSO/Accuplacer**
  Currently, Accuplacer is an option for students, but not a requirement. There will be some increase in cost for placement testing if we require students to take a placement exam.

• **Admissions/Academic Advisement/Registrar's office/NSO team**
  ◦ Coordination of the information that goes out to students that place into MAT 095.
  ◦ Designated person for monitoring and enforcing the MAT 095 proficiency policy.

• **Information Technology**
  ◦ Assistance with the computers for placement testing.
  ◦ Assistance with giving freshmen/transfer students access to the MAT 095 Blackboard course materials.
  ◦ Support for the technology in a future emporium classroom space
Computer stations in Wintergreen for individual appointments for placement testing

- **Facilities**
  - Emporium classroom space (ready by 2016/2017)

Respectfully submitted by Dr. Therese Bennett, Mathematics Department Chairperson

**Members of the Developmental Taskforce, Fall 2013**
Terri Bennett (Chair)
Steven Breese (Dean of Arts and Sciences)
Len Brin
Alain D'Amour
Emmett Dennis
Cynthia Gubitose
Marty Hartog
Marie Nabbout-Cheiban