Shortening the Path Through Developmental Math

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South Dakota State University
AMATYC November 18, 2016
Denver, CO
Overview

• Background Information
• Placement
• Pathways
  – PreCollege Algebra
  – Corequisite College Algebra
  – Corequisite Quantitative Literacy
• Challenges and Support
• Changes and the Future
South Dakota

- 6 State Universities
- 4 Technical Institutes
- No community colleges!
South Dakota State University

• South Dakota’s Land Grant Institution
• Located on the east side of the state in Brookings, SD; population 22,200
• Largest University in South Dakota with over 12,500 students
• Admissions requirements - ACT of 18 or above (SAT-1 score of 870 or above)
• 14.7% of first time Freshmen place into developmental math
Placement

The first step is to make sure students are where they need to be!
# SD Board of Regents Placement Policy

<table>
<thead>
<tr>
<th>Course</th>
<th>MATH Index (MI)</th>
<th>Accuplacer Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>PreCollege Algebra</td>
<td>0 or higher</td>
<td>Arithmetic 0 - 120 or Elem Algebra 0 - 75</td>
</tr>
<tr>
<td>College Algebra with Lab or Quant. Lit. with Lab</td>
<td>950 or higher</td>
<td>Elem Algebra 44 - 75</td>
</tr>
<tr>
<td>College Alg. or Quant. Lit. or Intro to Stat. with Lab</td>
<td>1150 or higher</td>
<td>Elem Algebra 76 - 120 College Level 0 - 50</td>
</tr>
</tbody>
</table>
Math Index

• Math Index is calculated as follows:
  \[ MI = (17 \times \text{Math ACT}) + (250 \times \text{unweighted HS GPA}) \]

• Students can challenge MI placement by taking the Accuplacer
College Algebra Success Rates by MI Range
Placement Discussion

• Take 5 minutes to discuss with your table how placement works at your institution.
  – Do you feel your placement policy is effective?
Pathways

Create alternate paths for liberal arts and STEM majors and reduce the number of courses on the path.
Changes over the Last 5 Years

Prior to 5 years ago, we had a traditional format – Basic Algebra to Calculus

• Went from two developmental courses to one 2-semester mastery based developmental course.
• Converted mastery course to a “1 semester” mastery course.
• Created a Quantitative Literacy course.
• Created corequisite for College Algebra followed by ones for Quantitative Literacy and Intro to Statistics.
Current PreCollege Algebra

- Mastery based - (Self-Paced)
- 3 classes a week, 2 hours each class
- Average section size is 80 students
- 2 instructors, 3 to 4 GLA’s, 1 ULA
- MiniLectures offered
- Testing available Monday through Friday
- Personalized “On Track” Calendars
PreCollege Algebra Design

- 12 Modules & 3 Exams
- Test Out Exams first week
- Complete Learning Guide
- Personalized Homework
- Practice Quiz
- Quiz
- Retake Plan
PreCollege Algebra Policies/Data

- Attendance Policy
- Math 099 Enhanced PreCollege Algebra
- Overall Completion Rates
- Returners vs First Timers
Returners vs 1st Timers

- Fall 14
- Spring 15
- Fall 15
- Spring 16

Legend:
- Old
- New
Discussion of Attendance Policies

• Take 5 minutes to discuss with your table attendance challenges at your institution.
  – Do you have an attendance policy? Do you implement other ways to increase student attendance?
About Our College Algebra

- Each Fall, we enroll about 900 on-campus College Algebra students in 3 large lectures.
- Each Spring, we enroll about 600 on-campus College Algebra students in 2 large lectures.
- Average passing (C or better) rate for College Algebra is 60%.
# Corequisite College Algebra

<table>
<thead>
<tr>
<th>College Algebra</th>
<th>Corequisite Lab</th>
</tr>
</thead>
<tbody>
<tr>
<td>o Large lecture</td>
<td>o Wednesdays and Fridays</td>
</tr>
<tr>
<td>• Tuesdays and Thursdays</td>
<td>o Learning Guides</td>
</tr>
<tr>
<td>• Common lectures with note guides</td>
<td>o Lab Worksheets (group work)</td>
</tr>
<tr>
<td>o Recitation</td>
<td>o Emphasis on Study Skills</td>
</tr>
<tr>
<td>• Mondays</td>
<td></td>
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<tr>
<td>• Group work</td>
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*South Dakota State University*
Corequisite College Algebra

- Corequisite students are intermixed with “regular” students for College Algebra.
- Grades from the College Algebra and College Algebra Lab are combined.
- Just-in-time remediation.
- Study skills!
Success Rates

Success Rates (C or Higher)

- CoReq Spring
- Spring
- CoReq Fall
- Fall

<table>
<thead>
<tr>
<th>Year</th>
<th>CoReq Spring</th>
<th>Spring</th>
<th>CoReq Fall</th>
<th>Fall</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>70.00%</td>
<td>60.00%</td>
<td>70.00%</td>
<td>60.00%</td>
</tr>
<tr>
<td>2013</td>
<td>60.00%</td>
<td>50.00%</td>
<td>60.00%</td>
<td>50.00%</td>
</tr>
<tr>
<td>2014</td>
<td>50.00%</td>
<td>40.00%</td>
<td>50.00%</td>
<td>40.00%</td>
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<tr>
<td>2015</td>
<td>40.00%</td>
<td>30.00%</td>
<td>40.00%</td>
<td>30.00%</td>
</tr>
<tr>
<td>2016</td>
<td>30.00%</td>
<td>20.00%</td>
<td>30.00%</td>
<td>20.00%</td>
</tr>
</tbody>
</table>
Corequisite Quantitative Literacy

• Very similar format to Corequisite College Algebra
  – Focus on PreAlgebra and Algebra skills needed to pass Junior Proficiency Exam.
Corequisites Discussion

• Take 5 minutes to discuss corequisite courses at your table.
  – Has your institution implemented corequisites? Are you thinking about trying corequisites?
Challenges

• Class sizes
• Difficult to tell what worked
  – A lot of changes happened at once
• BOR requirements
  – Pushing changes before resources/staffing available
  – Placement changes
  – Grading
• Educating advisors and other departments
Support

• Amazing support from administration and department in general
  – Funding
  – Highly collaborative
Changes/Future

• PreCollege Algebra collaborating with First Year Advising
• Quantitative Literacy pathway for PreCollege Algebra?
• Online corequisite College Algebra
• Dual-credit high school students
Questions?

If you have additional questions or would be interested in some sample course materials, contact:

• Becky Diischer
  – (rebecca.diischer@sdstate.edu)

• Carri Hales
  – (carri.hales@sdstate.edu)
Additional Information About

- PreCollege Algebra
- Corequisite College Algebra
# PreCollege Algebra

## “On Track” Calendar

**Math 095 Module 1 – Fall 2016**

<table>
<thead>
<tr>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>August 22</strong></td>
<td>23 First Day of Class</td>
<td>24 1.3 &amp; 1.4 Learning Guide Module 1 Quiz #1</td>
<td>25 1.1 &amp; 1.2 Homework 1.3 &amp; 1.4 Homework</td>
<td>26 Module 1 Practice Quiz</td>
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<tr>
<td></td>
<td>Syllabus Quiz</td>
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<tr>
<td></td>
<td>Intro Assignment</td>
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<tr>
<td></td>
<td>1.1 &amp; 1.2 Learning Guide</td>
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<tr>
<td>29</td>
<td>Module 1 Quiz #2</td>
<td>31 Last day to Test Out Module 2 Quiz #1</td>
<td>Sept 1 Last Day to Add/Drop 1.7 &amp; 1.8 Homework</td>
<td>2 “W” grade begins Module 2 Practice Quiz Module 2 Quiz #2</td>
</tr>
<tr>
<td></td>
<td>1.5 &amp; 1.6 Learning Guide</td>
<td>1.7 &amp; 1.8 Learning Guide</td>
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</tr>
<tr>
<td>5</td>
<td>NO CLASS</td>
<td>6 2.1 &amp; 2.2 Learning Guide 2.3 Learning Guide</td>
<td>7 Module 3 Quiz #1</td>
<td>9 Module 3 Practice Quiz Module 3 Quiz #2</td>
</tr>
<tr>
<td>Labor Day</td>
<td></td>
<td></td>
<td>2.1 &amp; 2.2 Homework</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>2.3 Homework</td>
<td></td>
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</tr>
<tr>
<td>12</td>
<td>2.4 &amp; 2.5 Learning Guide Module 4 Quiz #1</td>
<td>14 2.4 &amp; 2.5 Homework</td>
<td>15 2.6 Homework</td>
<td>16 Module 4 Practice Quiz Module 4 Quiz #2</td>
</tr>
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<tr>
<td>19</td>
<td>20</td>
<td>21</td>
<td>22</td>
<td>23</td>
</tr>
</tbody>
</table>
Additional Info About Coreq. College Algebra

• Each class has about 90 students
  – 1 Instructor
  – 4 GTAs
  – Students work in groups of 5

• Detailed Schedule
# Coreq. College Algebra Schedule

**Math 102 with Math 092L Fall 2016 Tentative Schedule**

- All 102 homework and 102 quizzes are due at 8:00 AM on their scheduled dates unless stated otherwise.
- All 092L homework and quizzes are due at 11:59 PM on their scheduled dates unless stated otherwise.
- All activities are completed in recitation and labs are completed in 092L lab.

<table>
<thead>
<tr>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug 22 – First recitation in Biostress 024! Intro Activity Due</td>
<td>23 – First lecture in Rotunda D! (SLO 2) Section 1.AT Notes</td>
<td>24 – First 092L lab! Syllabus Quiz Due Getting Ready HW Due Mod 1 LG, Lab 1, HW Due</td>
<td>25 (SLO 2, 3) Section 1.1 Notes</td>
<td>26 1.AT HW Due Mod 1 Lab 2 Due Mod 1 Quiz Due</td>
</tr>
<tr>
<td>29 1.1 Homework Due 1.AT &amp; 1.1 Activity Due</td>
<td>30 (SLO 1.2) 1.AT &amp; 1.1 Quiz Due Section 1.3 Notes</td>
<td>31 Mod 2 LG &amp; Lab 1 Due Mod 2 HW Due</td>
<td>Sep 1 – Last day to add/drop! Section 1.4 Notes (SLO 1, 3)</td>
<td>2 1.3 Homework Due Mod 2 Lab 2 Due Mod 2 Quiz Due</td>
</tr>
<tr>
<td>5 NO CLASS Labor Day</td>
<td>6 (SLO 1, 3) 1.3 Quiz Due Section 1.4 Notes</td>
<td>7 Mod 3 LG &amp; Lab 1 Due Mod 3 HW Due</td>
<td>8 (SLO 1, 2, 3) Section 2.1 Notes</td>
<td>9 1.4 Homework Due Mod 3 Lab 2 Due Mod 3 Quiz Due</td>
</tr>
<tr>
<td>12 2.1 Homework Due 1.3 – 2.1 Activity Due</td>
<td>13 (SLO 1, 2, 3) 1.4 &amp; 2.1 Quiz Due Section 2.3 Notes</td>
<td>14 Mod 4 LG &amp; Lab 1 Due Mod 4 HW Due</td>
<td>15 (SLO 1, 2, 3) Section 2.4 Notes</td>
<td>16 2.3 Homework Due Mod 4 Lab 2 Due Mod 4 Quiz Due</td>
</tr>
<tr>
<td>19 2.4 Homework Due Test 1 – 6:30 AM!</td>
<td>20 (SLO 1, 2) Section 3.AT Part 1</td>
<td>21 Mod 5 LG &amp; Lab 1 Due</td>
<td>22 (SLO 1, 2) Section 3.AT Part 2</td>
<td>23 3.AT Part 1 HW Due Mod 5 Lab 2 Due</td>
</tr>
</tbody>
</table>
Wednesdays

• Module learning guide due at start of class.
  – Study skills
  – PreCollege Algebra skills needed that week for College Algebra
  – eText and YouTube videos
• Lab 1 completed in groups
  – Study skills
  – Problems
  – Explain why/ Identify the mistake..
• Module 1 homework due online that night.
Fridays

• Lab 2 completed in groups
  – Highlights how the module concepts were used in College Algebra that week.
  – Reviews module and College Algebra concepts learned that week.
• Module quiz due online that night.