AIM – Acceleration in Mathematics at Lorain County Community College

Dr. Rosa Rivera-Hainaj, Dean – Science and Mathematics
Dr. Stephanie Sutton, Associate Provost for Enrollment Management and Student Success
Dr. Jonathan Dryden, Interim Provost/Vice President Learner and Academic Services
Chartered in 1963
Elyria, OH campus opened 1966
20 Minutes West of Cleveland
Diverse County—Suburban, Urban and Rural
Population mirrors county composition
15,000 LCCC Students
3,000 University Partnership Students

70% Part-time Students
30% Full-time Students
69% Receive Financial Aid/Scholarships
40% Pell eligible
In county tuition $118.34 per credit hour
Accredited by the Higher Learning Commission

We are the Community’s College!
Priority 1: Drive Student Completion for Academic & Career Success

- Reduce Time and Cost to Completion
- Coach Every Student
- Improve College Readiness
- Enhance Student Learning
- Develop Structured Pathways to In-Demand Careers and Employers
- Engage More Adult Learners
State of mathematics curriculum at Lorain County Community College
Math pathways at LCCC (up to Summer 2013)

- **MTHM 021**: Pre-Algebra
- **MTHM 022**: Pre-Algebra
- **MTHM 023**: Pre-Algebra

Promotion to college level transfer module math course.

- **MTHM 033**: Introduction to Technical Mathematics
- **MTHM 121**: Technical Mathematics I

**MTHM 161**: Mathematics for Elementary Ed I

- **MTHM 151**: College Mathematics
- **MTHM 168**: Statistics
- **MTHM 171**: College Algebra
Beginning 3 levels below college Math
Previous Pathway

- Math 021: 100%
- Math 022: 16%
- Math 023, 024 or 033: 4%
- College level Math: 10%
Beginning 2 levels below college Math
Previous Pathway

- Math 022: 100%
- Math 023, 024 or 033: 22%
- College Math: 23%
Math pathways at LCCC: From Fall 2013 to Spring 2016

- MTHM 041: Pre-Algebra
- MTHM 051: Beg. Algebra I
- MTHM 061: Beg. Algebra II
- MTHM 071: Int. Algebra I
- MTHM 081: Int. Algebra II
- MTHM 033: Introduction to Technical Mathematics
- MTHM 161: Mathematics for Elementary Ed I
- MTHM 121: Technical Mathematics I
- MTHM 150: The Art of Mathematical Thinking
- MTHM 151: College Mathematics
- MTHM 168: Statistics
- MTHM 171: College Algebra

Promotion to college level transfer module math course.
Beginning 3 levels below college Math
New Pathway

- Math 041: 100%
- Math 051: 72%
- Math 061: 43%
- Math 071: 25%
- Math 033 or 081: 18%
- College Math: 13%
Beginning 2 levels below college Math
New Pathway

<table>
<thead>
<tr>
<th>Course</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 051</td>
<td>100%</td>
</tr>
<tr>
<td>Math 061</td>
<td>73%</td>
</tr>
<tr>
<td>Math 071</td>
<td>36%</td>
</tr>
<tr>
<td>Math 033 or 081</td>
<td>35%</td>
</tr>
<tr>
<td>College Math</td>
<td>31%</td>
</tr>
</tbody>
</table>
Math pathways at LCCC as of Summer 2016

Non-Calculus Track
- MTHM 058: Foundations of Quantitative Reasoning

Calculus Track
- MTHM 051 – MTHM 081: Beginning and Intermediate Algebra

PHLY 171: Introduction to Logic
- MTHM 121: Technical Mathematics
- MTHM 150: Art of Mathematical Thinking
- MTHM 158: Quantitative Reasoning
- MTHM 161: Math for Elementary Ed
- MTHM 168: Statistics

MTHM 171: College Algebra

MTHM 041: Pre-Algebra
Grade Distribution MTHM 058 Summer 2016

# Students Enrolled = 144
% Success* (A-D) = 120 (83.3%)
% Progression** (A-C) = 113 (78.5)

* Success as per the State of Ohio definition, grade D or higher.
** Progression into College Level Math class as per the Math department policy at LCCC, grade C or higher.
144 students enrolled in MTHM 058 in Summer 2016

113 students (78.5%) progressed into college level math (grade of C or higher in MTHM 058)

89 students (78.7%) enrolled in college level math in Fall 2016

53 students (59.6%) completed college level math course in Fall 2016
Student feedback on the MTHM 058 course:

• “Overall a good course... I did not like the online HW system.”
• “Projects were ok, but too much to do in an 8 weeks course.”
• “The textbook was very helpful, learned a lot!”
• “Enjoyed the group work.”
• “Class was fat pace, concepts needed more attention.”
• “Really hated the textbook and the online homework system.”
Student Performance in College Level Math Courses When Progressing through MTHM 058 – Foundations of Quantitative Reasoning

<table>
<thead>
<tr>
<th>College Level Math Course</th>
<th>% Success (for students from MTHM 058)</th>
<th>% Success (overall for the course)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTHM 158 – Quantitative Reasoning (25 students)</td>
<td>64.0%</td>
<td>66.5%</td>
</tr>
<tr>
<td>MTHM 168 – Statistics (48 students)</td>
<td>60.0%</td>
<td>69.2%</td>
</tr>
</tbody>
</table>

The majority of students enrolled in college level math did so into MTHM 158 and MTHM 168 (73 out of 89 students)
# Students enrolled = 1026

% Success* (A-D): 751 (73.2%)

% Progression** (A-C): 665 (64.8%)

<table>
<thead>
<tr>
<th>Grade</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>239</td>
</tr>
<tr>
<td>B</td>
<td>246</td>
</tr>
<tr>
<td>C</td>
<td>200</td>
</tr>
<tr>
<td>D</td>
<td>86</td>
</tr>
<tr>
<td>F</td>
<td>153</td>
</tr>
<tr>
<td>W</td>
<td>93</td>
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<tr>
<td>FAW</td>
<td>26</td>
</tr>
<tr>
<td>I</td>
<td>1</td>
</tr>
</tbody>
</table>

* Success as per the State of Ohio definition, grade D or higher.

** Progression into College Level Math class as per the Math department policy at LCCC, grade C or higher.
Completion of MTHM 058 and MTHM 168 in Fall 2016

<table>
<thead>
<tr>
<th># Students that progressed to College Level Math from 8A MTHM 058</th>
<th># Students enrolled in College Level Math in 8B Fa2016</th>
<th># Students that completed College Level Math in 8B Fa2016</th>
<th># Students enrolled in College Level Math in Sp2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>51</td>
<td>28 (54.9%)</td>
<td>20 (71.43%)</td>
<td>18 (35.3%)</td>
</tr>
</tbody>
</table>
MTHM 158 FALL 2016 GRADE DISTRIBUTION

TOTAL # STUDENTS: 179
% SUCCESS (A-D): 119 (66.5%)
Lessons Learned

Professional Development for Faculty is crucial for new curriculum implementation success.

Professional Development for Advisors/Counselors is crucial for new curriculum enrollment success.

It takes time for students to feel comfortable with a new online hw system.
Supplemental Instruction as a way to enhance student learning in College Algebra (MTHM 171)

- Students attend lecture twice a week for 2 hours.
- Students attend SI sessions twice a week in smaller groups before or after the class lecture.
- SI facilitators are not the lecture instructors, either former students that have been successful with the course or professional tutors.
- SI sessions are not optional; students enroll at time of registration. Short assessments are administered during SI sessions.
# STUDENTS ENROLLED: 300
% SUCCESS (A-D): 173 (57.7%)
% PROGRESSION (A-C): 139 (46.3%)
Lessons Learned

- Students not always attended the SI sessions, even when there was graded components.
- Professional Development for SIs is essential. Constant feedback loop needed.
- Professional Development for Faculty is essential. Instruction variety among faculty may be a difficulty to standardize SI sessions.
- Still need to figure out how to lower the number of "Ws" in this course. A new withdrawal process was implemented Sp2017, hopefully this will aid on this issue.
Future plans

Co-Course Strategy Pilot with college level Quantitative Reasoning

Blended and On-line Modalities

Continue data gathering and analysis
This work was supported by:

- Lorain County Community College
- “Bridges to Success” pilot from the Ohio Department of Higher Education
- “Middle Skills STEM Pathways” from JFF and ATD
- Completion by Design
- Achieving the Dream
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