MSU Gateway Math Reform

Steering Committee
April 3, 2018
Mark Largent, on behalf of the APUE
What changes are being made?

<table>
<thead>
<tr>
<th>50% Entered with Algebra Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>40% Need to Take MTH103</td>
</tr>
<tr>
<td>10% Need to Take MTH1825</td>
</tr>
</tbody>
</table>
Data: MTH 10 1/2 vs. MTH 1825

Average Grades in FS2017 MTH101 by Math Placement Score of Students Who Had Previously Passed, Failed or Not Taken MTH1825

- After Passing MTH1825
- After Failing MTH1825
- Never Took MTH1825
Design Principles for MTH 103A/B

- MTH 103 (all versions) focus on path to calculus
- “Growth Mindset” - assist all students to master algebra.
- In-person classes, focused just-in-time support
- Standards-based pedagogy - ongoing teaching/learning cycle allowing development of skills over one year
- All courses degree credit-bearing
- Revised placement and pre-enrollment system, leveraging HS transcript data, for more accurate placement and planning
- MTH 103A/B curriculum and pedagogy builds on the successful Dow/STEM program
Avoiding Underplacement

- Underplacement delays student progression, and can contribute to stereotype threat.
- Use HS transcript analysis to refine placement.
- OPB HS transcript pattern analysis reveals that we can identify students who score low on MPE but will likely succeed. Process identified ~2000 students from 2000-2016 who
  - first MTH course 1825, succeeded (2.0 or higher) at 90%
  - first MTH course 103, succeeded (2.0 or higher) at 96%
- Change placement for these students to MTH 103 independent of MPE score - “off ramp” to MTH 103A
Math Graduation Requirements

DRAFT

The university Mathematics requirement ensures that all students build a foundation of quantitative literacy. Each student must complete the university Mathematics requirement by fulfilling one of the options below:

1. Complete two of the following courses:
   a. Mathematics 101, 102, 103 or (103A & 103B)

2. Complete both of the following:
   a. Mathematics 103 or (103A & 103B); and
   b. One of the following courses: Mathematics 114, 124, 132, 152H, or 201; or Statistics and Probability 200 or 201. Students who place into any course in 2.b. via the Mathematics Placement Exam need only complete the course in 2.b. in order to fulfill the University Mathematics requirement.

3. Complete MTH 101 or 102; and STT 200 or STT 201

4. Complete MTH 116

5. Waiver through a proctored Mathematics Placement Exam yielding a score resulting in placement in Mathematics 132 (calculus). For additional information, refer to the statement on Academic Placement Tests – Mathematics (Algebra) in the Undergraduate Education section of this catalog.

Students who transfer one of the following: Mathematics 114, or 201; or Statistics and Probability 200 or 201 alone, with no other mathematics course above the level of MTH 1825, must take the Mathematics Placement Exam. Based on the score achieved, additional coursework may be required to fulfill the university Mathematics requirement.
Math Pathways to Graduation

Math Placement Test 0 – 9:
(or placement by H.S. transcript)
- MTH 101 & MTH 102
  (can be taken in either order)
  - MTH 103A
  - MTH 103B
- AND Any 1 of the following:
  - MTH 101
  - MTH 102
  - MTH 114
  - MTH 124
  - MTH 201
  - STT 200
  - STT 201

Math Placement Test 10 – 14:
(or placement by H.S. transcript)
- MTH 103
- MTH 101
- OR
- MTH 102
- AND Any 1 of the following:
  - MTH 102
  - MTH 103
  - STT 200
  - STT 201
- AND Any 1 of the following:
  - MTH 101
  - MTH 103
  - STT 200
  - STT 201

Math Placement Test 15 – 18:
- MTH 116
  (MPS ≥12)
  OR
- MTH 101
  OR
- MTH 102
- AND Any 1 of the following:
  - MTH 102
  - MTH 103
  - STT 200
  - STT 201
- AND Any 1 of the following:
  - MTH 101
  - MTH 103
  - STT 200
  - STT 201

Math Placement Test 19+:
- MTH 132 or LB 118
- OR
- Any 1 of the following:
  - MTH 114
  - MTH 1116
  - MTH 124
  (prereq MTH 103)
  - MTH 201
  - STT 200
  - STT 201

** A Proctored Math Placement Test Score of 19 or above will also fulfill the requirement.
MTH 1825: Ending

MTH 1825 neither needed nor offered beginning Fall 2018

- Off-sequence and summer offerings of MTH 103A/B, along with MTH 101, 102, 103, allow student to start year-round

- For students needing to repeat MTH 1825, we will associate (on an individual, as-needed, basis) successful completion of MTH 101, 102, 103, or 103B, instead.
April 2018 Status

- Resources - in hand
- Curricular planning - in progress, based on Dow/STEM
  - Teena Gerhardt, Jane Zimmerman, Becky Matz
- MTH 103A and 103B courses approved by NatSci Curriculum committee - continuing in governance
- Changes to University Math Requirement - submitted to university governance FS18
- Course and room scheduling - spaces reserved, scheduling in process
- Roll-out to campus ongoing
- Math/HUB collaboration
Discussion