

## General Education Assessment Mathematics Action Plan

Please interpret the findings and provide a specific action plan that can be implemented to improve or reinforce student learning as a result of the assessment process. The action plan should address the area(s) in need of improvement or reinforcement. The plan does not have to be limited to general education student learning but could include departmental initiatives designed to improve student success.

### **Part One: Results Discussion / Reflection**

Please provide insightful interpretations of the results presented in the Findings section, noting any relevant context / background or concerns the unit may have.

One issue faced by all three courses assessed in Fall 2020 was the compressed timeframe of the block scheduling. On top of that, most sections were scheduled face-to-face, going online shortly before the start of the semester. This left instructors and students—most of whom were not previously involved in DE—little time to make the needed adjustments. Further, undergraduates were effectively sent home two weeks into the semester forcing all support services (e.g., the Math Lab and PASC) to also move entirely online.

There was an additional issue confronting Math 1065. While Math 1050 and Math 2228 have no prerequisites and may be taken by anyone, Math 1065 requires either completion of Math 0001/0045 or a suitable placement score. Prior to 2020-21, this meant a high enough score on the SAT or ACT. With the pandemic, the requirement that students submit a standardized test score was eliminated. As a substitute, ECU used unweighted high school GPA for placement. While the department worked with IPAR to try to find the best cutoff; subsequent analysis of the Fall 2020 results by IPAR indicated this was not the ideal approach. In short, students taking Math 1065 may not have been as well-prepared as was previously the case.

On a similar note, this was the first semester that there was no prerequisite for Math 2228, though that change had been planned and was not a pandemic response. The changes in DWF rates for Math 2228 through the pandemic mirrored what happened in most other math classes, so while this may also have resulted in some students being less well-prepared, further analysis will be needed to determine whether this is the case.

Question 1: The department is not surprised by the results: no significant difference between fall and spring in most cases; slightly higher in spring. Given the block schedule and the fact that fall was the first DE experience for many students and instructors, it is reasonable that if there were a difference, spring students might do a little better.

Question 2: The results for Math 1050 and 1065 were not surprising--with either no significant difference between transfer and non-transfer students or non-transfer students doing slightly better. (In the previous assessment cycle, it was also non-transfer students who did slightly

better in Math 1065.) This is likely attributed to a longer delay since previous math courses, especially for Math 1065 which heavily relies on previous material. The situation for Math 2228 is a little different. Although there is no longer a prerequisite, that is a new development. Further, many programs which require Math 2228 also require Math 1065. Thus both transfer and non-transfer students are likely to have taken college-level mathematics courses. With that in mind, the fact that transfer students did slightly (but not statistically significantly) better is not surprising.

## **Part Two: Action Plan**

Please describe what actions you will take as a result of the assessment in the following four areas.

### **a. Pedagogical / Curriculum**

#### **Action plan 1: Syllabus revision**

The department is doing a substantial revision for the syllabus for Math 1050, replacing a number of topics. The net effect will be to significantly reduce the amount of probability topics. Item analysis show that these have been less effective in achieving general education goals. Moreover, with Math 1050 no longer serving as a (choice of) prerequisite for Math 2228, the need to include a large amount of probability is no longer there.

#### **Action plan 2: Course restructuring**

In addition to the syllabus changes, there will be some changes to the structure of the course. In particular, prerequisite modules and exam review modules will be added to help ensure students' mastery of the material.

#### **Action plan 3: Adaptations for difficult topics**

For Math 1065, the department is going to move from using the lecture time to review topics students had difficulty with to using it to talk about upcoming material. We will also budget additional time for difficult topics and include additional proctored knowledge checks in an effort to help students perform better on difficult topics.

#### **Action plan 4: Sequencing for Math 0001/0045 and Math 1065**

In Spring 2023, in conjunction with the Math Pathways initiative, we plan to run a trial offering Math 0001/0045 and Math 1065 in the first and second 8-week blocks, respectively. The compressed timeframe should not only help with retention of material in the transition from Math 0001/0045 to Math 1065, but also allow students to move on more quickly to their courses having Math 1065 as a prerequisite.

## **b. Student Support Services**

### **Action plan 5: Placement test implementation**

A critical component of student success for Math 1065 is preparedness. With the requirement of standardized test scores eliminated (at least for now) and issues of effectiveness for unweighted high school GPA placement, the department constructed a placement exam based on the paper-and-pencil placement exams used by the department a number of years ago. The exam is taken on Canvas and the results integrated into Banner for easy use by advisors. Note that the placement exam has three component exams, the first of which is for placement into Math 1065. Students doing well enough on that may take a second exam to place out of Math 1065 into a course having Math 1065 as a prerequisite and (if successful) a third exam to place into Math 2171 (Calculus I).

The placement test was developed and implemented in response to the issues arising in Fall 2020 and was first used for the 2021-2022 cohort. We are monitoring the results in an effort to determine any changes in cutoffs, etc., which may be needed. The first set of data was inconclusive.

## **c. Faculty Development**

### **Action plan 6: Faculty training**

As noted above, the shift to online for these courses was done shortly before the start of the fall semester. Many faculty members were neither experienced nor trained in DE when navigating the shift. Subsequently, the university returned to requiring DE training for everyone teaching DE courses (at that point, essentially all faculty). This remains in force.

## **d. Other Areas**

### **Action plan 7: Data collection improvements**

Recognizing the need for better data for Math 2228, the department will implement changes to collect common data from all sections for institutional assessment.