

Students Taking Gateway Courses with ACUE Faculty at the University of Southern Mississippi Have Lower DFW Rates in Subsequent Courses

Significant differences between ACUE and non-ACUE faculty in DFW rates.

At the University of Southern Mississippi (USM), faculty began taking ACUE microcredential courses in fall 2016. These analyses focus on students who took a gateway course between fall 2016 and fall 2019 and later enrolled in a subsequent course in the same field of study between spring 2017 and spring 2020. Students could take multiple different gateway courses, in which course sections were taught by either one of 17 ACUE faculty or one of 56 non-ACUE faculty. We find evidence that students who took a gateway course with ACUE faculty received higher grades and had lower DFW rates in their subsequent course in the same field of study.

Key Findings

- There was a **significant difference in students' DFW rates** between those who took gateway courses with ACUE faculty and those who took gateway courses with non-ACUE faculty, $p = .035$.
 - **DFW rates in subsequent courses were 3 percentage points lower for students who took gateway courses with ACUE faculty** compared to students who took gateway courses with non-ACUE faculty.
- There was a **marginally significant difference in students' subsequent course grades** between those who took gateway courses with ACUE faculty and those who took gateway courses with non-ACUE faculty, $p = .067$.
 - **Students who took gateway courses with ACUE faculty earned subsequent course grades that were, on average, .06 points higher (on a 4.0 scale)** than students who took gateway courses with non-ACUE faculty.

Methodology

The data comprises 4,502 student-by-course section level outcomes, representing 1,976 unique students, between spring 2017 and spring 2020. Over these years, students took a subsequent course in a field of study after having taken an initial, or gateway, course with either an ACUE or non-ACUE faculty.

Because faculty complete the ACUE microcredential course at different times, they are defined as ACUE faculty in both the years while and the years after they complete the course. Otherwise, faculty are defined as non-ACUE faculty in the years prior to taking the ACUE course or if they never began an ACUE course during the sample period. Using these conventions, the sample included 17 ACUE faculty who taught 107 gateway course sections and 56 non-ACUE faculty who taught 199 analogous gateway course sections. Gateway course sections excluded from the sample are those taught by graduate students or in summer terms, co-instructed sections, as well as sections with fewer than 10 students enrolled. We also excluded labs that accompany gateway courses, and we limit our analyses to undergraduate students.

A subsequent course is defined as the second course in the same field of study in which the gateway course was taken and that is taken in a subsequent term to the gateway course. For students who withdrew from and/or repeated a gateway course, we kept their initial enrollment in the gateway course. Therefore, the subsequent course may have been taken in the immediate semester after the gateway course or in a later semester.

Methodology (continued)

For students who had multiple options of subsequent courses—e.g., because they take multiple courses in the same field of study as and in the same term after taking their gateway course—we used the course with the lowest course number (e.g., if a student simultaneously takes Biology 300 and Biology 310 after having taken Biology 250, we use Biology 300 as the subsequent course). Importantly, results are not sensitive to randomizing our choice of subsequent course.

To examine the extent to which taking a gateway course with an ACUE instructor impacts subsequent course performance, we conducted descriptive analyses using a three-way fixed effect approach. The key explanatory variable is a dichotomous variable coded to 0 (the reference group) if a student took the gateway course section with a non-ACUE faculty and to 1 if they took the course section with an ACUE faculty. Fixed effects include student fixed effects, term fixed effects, and next-course fixed effects. We also controlled for course-section characteristics (enrollment count), faculty characteristics (gender, experience, if tenure-track) and time-varying student characteristics (class standing, Pell recipient, whether course is in intended major).

Course grades were converted from an alphabetic scale to a numeric equivalent (A = 4, B = 3, C = 2, D = 1, F = 0). Students who withdrew from a course before receiving a final grade or had grades that could not be converted to a numeric scale (e.g., P) were not included in analyses when course grades were used as an outcome. At USM, passing grades included A, B, C, D, Z, and P, and DFW grades included D, F, W, and NP.