CSUN: Tools to Collect and Analyze Data
Deep dive into student work to achieve student success

At CSUN we value data as information to improve student success. Our approach to EO1110 has been a natural extension of our long running attention to contextualized data to make information-guided decisions. At the university level this has included the creation of the faculty data champions program and a new professional advising team of graduation and retention specialists. All colleges identified bottleneck courses and other impediments to student success. Their work with data has been great at identifying problems. However, by its very large-lens nature, it is not as good at uncovering curricular changes that could improve student success. This is where CSUN's granular analysis of data, arising from student work in large multi-section gateway courses, has been fundamental.

Here is what we did in the Math Department
Courses were identified as gateway and fundamental to student success for a large number of students. The department and the relevant faculty agree to have the multi-section courses be tightly coordinated across all sections. A course coordinator is appointed by the chair and they coordinate (at a minimum) the following **common** materials: syllabus; textbook; lecture notes; core homework assignments (80% of the homework); core exam problems and exam schedule (80% of the exam problems); and final exam, commonly graded on campus with common rubric (one team grades one problem for all students).

At the end of the term, the following data are collected by student/instructor: homework grade (overall); exam grades (each exam); final exam score for each problem recorded for each student

During the break between terms the course coordinator prepares a report which analyzes the learning objectives to identify signs of struggle. This may seem small scale but it has large scale implications. The critical questions to address:

- Is there evidence that there is a problem of coordination of the lecture notes, homework, exam problems, and final exam problems for that learning outcome?
  - How does that inform changes in course materials? If so, which of these were made for the subsequent term and which are longer term?
  - Does this have logistical or professional development implications? Are the materials sufficiently easy to use for both faculty and students? Are they accessible?
- Are there some instructors whose students are doing better or worse on particular topics?
  - Does this have professional development implications for the pre-term meeting? Is it content knowledge or pedagogy?
  - Does this have professional development implications beyond what can be done in the pre-term meeting or beyond what CSUN can provide?
- Are there student groups who are not as successful as others?
  - Is there a need to add/change co-requisite structures?
  - Are there obvious moments in the term where we are losing students? Can we interrupt those mechanisms?
 - Do we need cohorting or should a new course be developed for students in particular major groupings?

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Case study: stretch and split versus co-requisite
Most CSUN students were placed in stretch courses in 2018-19, including those in statistics pathways and algebra pathways.

The Math Department had been successful in decreasing DFW rates in statistics (MATH 140) since 2014 when the course was divided into specialized versions targeted at social science, STEM, and business students. After EO 1110 the DFW rates, especially for category 3 and 4 students in the stretch model were creeping back up.
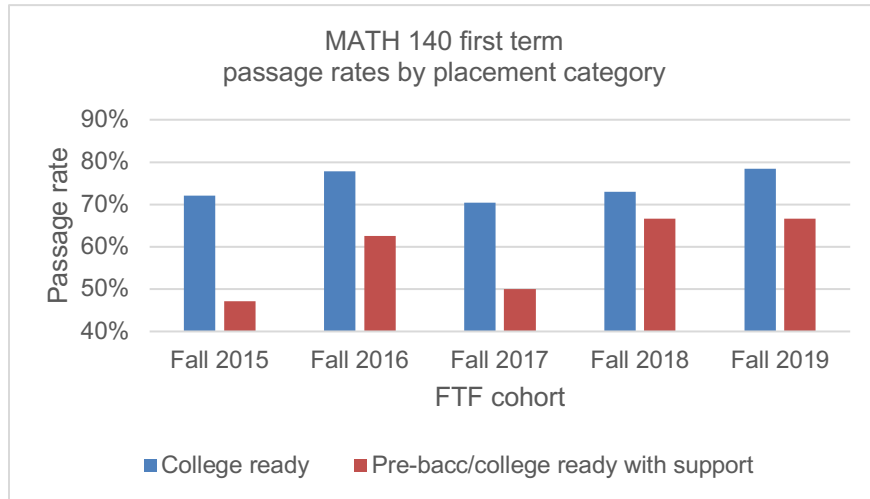
We piloted a co-requisite model in our "Ideas in Math" course (Math 131) with promising results in 2018-19. Passage percentages have remained in the high 80's even for Level 3 and 4 students.
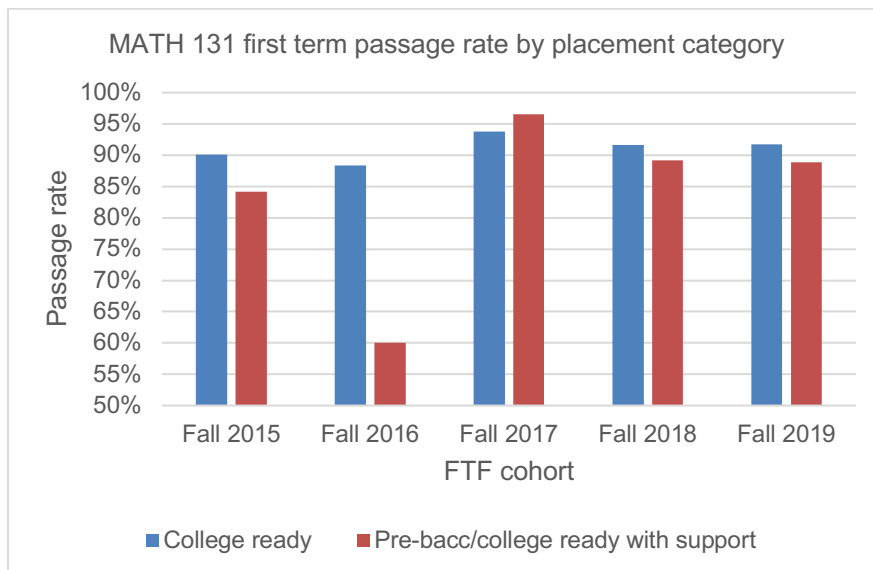
We used a course structure and data analysis to pivot our EO1110 approach from a "stretch and split" model enacted in Fall 2019 to a completely tailored corequisite model for all our entry level GE math courses (outside of the Calculus Sequence) by Spring 2020.