MONTCLAIR
S T A T E   U N I V E R S I T Y

STAT 109

Updated: June/02/2026
Compiled by: Haiyan Su

Program

Teaching Innovations Program (TIP): a year-long program that supports faculty teams in developing or redesigning a course or academic program

Intervention

The redesign of STAT 109 aims to enhance consistency and learning outcomes by creating a standardized approach to course delivery, while still allowing instructors to have some flexibility. The redesign includes developing a consistent syllabus, an instructional guide, common assessments and activities to improve students' engagement.

Participating faculty

Haiyan Su (lead faculty), Nina Bailey, Asja Alic

Implementation

1. All sessions adopt the new designed course
2. All sessions use the common Montclair Syllabus
3. A Course guide is provided to all instructors
4. In the Fall 2024 semester, all course sections administered a common final exam–though in some cases, it was used for bonus points, as it was not originally included in the syllabus. In Spring 2025, all sections implemented both a common midterm and a common final exam to ensure consistency in content coverage across instructors and uniformity in student learning assessment.
5. Recommended activities and readings are provided by topics.
6. Zoom meetings (emails) are used to get feedback from instructors or exchange ideas.

Course Redesign Goals and Analysis

Summary

Goal 1: Reduce variation in students learning experience across sections
Status: Completed

Discussion: All session instructors use the same Montclair Syllabus and are required to cover the same materials, with a common course-long project, Pearson/StatCrunch assignments and common midterm and final assessments; instructors have freedom to choose in class activities. Some instructor does not like StatCrunch or Pearson assignments.

Goal 2: Improve students' success and belonging by practices and activities
Status:In progress
 Discussion: Suggested activities and readings are provided for instructors by topics. Instructors can also find their own class activities to engage students. Students learn by practicing their skills through semester-long projects for collecting data, exploratory data analysis and inferential analysis. Students also practice their skills through class activities in Desmos, and StatCrunch apps. A wide variety of real-world modern examples are used in class, so that students can reflect upon the statistical content and how it connects to class materials.

Some students struggle to identify project topics at the beginning of the semester. Providing a list of suggested topics could help guide them. Additionally, some students do not actively participate in class discussions; instructors may need more engaging strategies to encourage students' involvement.

Goal 3: Establish standardized assessment criteria and rubrics to evaluate student performance consistently across different sections, and design a method to gain feedback
Status: In progress
Discussion: Grade rubrics are provided for grading projects. Common midterm and final exams are provided with solution keys to all sections. Pearson assignments are graded by the Pearson system. A survey should be developed to gather feedback from students. Additionally, since some students are using AI to complete assignments or exercises, a clearer and more effective policy on AI usage is needed.

Goal 4: Increase retention of student population that takes this course
Status: Completed:
Discussion: Students can have multiple attempts on Pearson/StatCrunch assignments to reduce their pressure and improve their grade. Extended deadlines are also possible for assignments and projects on individual cases. Suggest to give reminders to students about the deadlines and have conversions for students who didn't submit coursework.

Student Perspectives

The majority of students agreed that their instructors clearly explained the course goals and requirements, taught the course in an organized manner, and used examples to illustrate difficult concepts. Students also reported spending most of their class time actively engaged—working individually or in groups, listening to lectures, or watching instructional videos. Some students particularly enjoyed the project component, as it allowed them to choose topics of personal interest and apply data analysis skills to real data. Others appreciated the use of Desmos

activities, which helped them better understand complex concepts such as the impact of outliers, standard deviation, least squares regression, and sampling distributions.

Grade Data Highlights

The DFW rates decreased significantly from 25.8% in Spring 2024 to 16.9% in Fall 2024, and further to 16.0% in Spring 2025.
The percentage of A grades increased from 28.8% in Spring 2024 to 53.9% in Fall 2024 (when no common midterm or final was administered), and then to 38.1% in Spring 2025 (with a common midterm and final).
B grades also saw an increase, rising from 26.9% in Spring 2024 to 32.5% in Spring 2025.

Next Steps

- StatCrunch will be bundled with Stat230 so that students don't need to purchase it separately. This avoids the gap of some students accessing StatCrunch due to financial issues.
- A project topic list will be provided to students who have trouble finding their own topics. Instructors are encouraged to adopt a variety of strategies to actively engage students in class activities.
- AI policy need to be more specific in the syllabus such as students can use AI to brainstorm ideas or review writing, but not permitted for using AI to fully write assignments or solve graded problems, submitting AI-generated content as your own original work, relying on AI to complete coding, statistical analysis, or project reports.