Acknowledgements

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The approach was assessed by a direct comparison of exam results with a control section of the regular version of ME211 taught in W-16. While the performance in the first two mid-terms mirrored the GPA distribution for both classes, the performance of the experimental section was significantly superior to that of the regular section.

Abstract

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Methods

The student population for the experimental section was self-selected. 25 students enrolled in the first semester, but one student changed majors after F-15 and did not enroll in the second section. The demographics of the students in the experimental section were strikingly different from the usual enrollment in a Mechanical Engineering class, with 37.5% females, and 29.2% being males of apparently non-European descent.

The homeworks were similar for both sections, although not identical because of the timing. The first two mid-terms were identical for both sections, although neither section knew this. Solutions were not published before the regular class had taken the exams, but some numbers were changed to ensure integrity. Both sections took an identical final on the same day (April 20, 2016), and these exams were marked together as a unified group.

The regular section of ME211 consists of three faculty-taught lectures plus one GSI-led discussion section per week. The experimental section consisted of three faculty-taught lectures plus one GSI-led discussion section every two weeks.

Each semester of the experimental section required students to enroll in a 2-credit class ME499-098. At the end of F-15, one mid-term and half the homeworks had been completed, and a "Y" grade was assigned. At the end of W-16, the "Y" grade was replaced by a letter grade based on the overall performance during the two semesters.

Results

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