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Minimizing the institutional change required to augment calculus with real-world engineering problems.

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Summary: This paper presents a method for allowing calculus taught by mathematics faculty to be augmented with real-world engineering problems. The method relies on modules to deliver the problems and required background information. Students complete the modules outside of class and discuss them in mentor-led sessions. To encourage participation, students receive a 5% extra credit for attending the discussions having attempted the modules. The results of the study show that, on average, more than 90% of students enjoy the modules or are indifferent to them. The majority of students also found that the modules better prepared them for success in calculus. Moreover, the engineering content was useful in helping students feel connected to engineering.

Classification: M55 I15

Keywords: calculus education; student persistence; mentoring; engineering

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