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In this project, Mathematics and Engineering faculty are committed to redesigning Calculus I-II, previously identified as roadblocks for science/engineering majors, with over 40% of students earning a grade below C. To increase retention rates and improve STEM learning, faculty will ultimately redesign Calculus I-II to foster the application-oriented approach. A flipped classroom model will be utilized in which procedural learning is supported by online videos, freeing up face-to-face time to focus on conceptual understanding using active and collaborative learning. Following key recommendations outlined in the Curriculum Foundations Project, faculty will collaborate to revisit course content, identify appropriate applied topics, and study best teaching practices. The team will develop problems based on the identified applied topics and create video lectures that students will access online outside of class. Course materials will be developed and revised as the course moves from pilot sections to broader implementation. In addition, graduate recitation leaders will lead weekly sessions designed in close collaboration with faculty, to help students learn the course material and develop stronger learning/study strategies. The first pilot section (Fall 2017) signaled optimism. (Received September 26, 2017)