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Engaging and Retaining Underprepared Engineering Majors With Math-Heavy Applications.

Campbell University has launched a new School of Engineering in Fall 2016. We are interested in creating a pipeline (instead of a filter) for students interested in engineering who enter college without the appropriate mathematical background. To accomplish this, we have created an Introduction to Engineering Applications Course that takes students through mathematics content from beginning algebra through integral calculus using a variety of engineering applications. Emphasis is placed on hands-on exposure to engineering concepts, teaching the early mathematics content along side the related applications, teaching students MatLab to handle the mathematics content beyond their reach, and incorporating professional development and service requirements for students in the course, in order to more fully engage them in School of Engineering activities. We will report on our first year success, as well as identify areas for further improvement. Student feedback on the course will be included. This course is based on work from NSF grants by Dr. Nathan Klingbeil, NSF Grant Numbers EEC-0343214, DUE-0618571, DUE-0622466, DUE-0817332. (Received September 19, 2016)