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An inexpensive capacitive force sensor laboratory for introductory physics labs CHRIS NAKAMURA, RYAN A. FRENCH, JOHN J. POTTS, MATTHEW D. VANNETTE, Saginaw Valley State University Physics Department — We present a laboratory activity in which students build and characterize a capacitive force sensor. The activity uses a simple foil capacitor and LCR meter. We have tried the activity with algebra-based physics students but it is appropriate for other levels. The lab uses ideas of approximation either qualitatively for high school or algebra-based physics, or via Taylor expansion for calculus-based physics. For advanced undergraduate students we are exploring using the sensor in an LC oscillator. The experiment highlights application of physics in an interesting context.

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