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Craig J. Calcaterra* (craig.calcaterra@metrostate.edu), 700 E. 7th St., Saint Paul, MN 55106. *Flows on metric spaces: ODEs, PDEs, SDEs and DDEs.*

The ultimate purpose for studying compactness and uniform convergence is to prove convergence of approximating families, such as function approximation and existence of solutions to differential equations. Such justifications are usually hidden from students until well into graduate school or later. This report discusses the use of the elementary concept of flows on metric spaces to efficiently introduce several important applied analysis subjects typically relegated beyond the undergraduate curriculum. This unified approach allows students to breach varied topics in one semester, including existence theory, control and stability of ordinary, partial, stochastic, and delay differential equations (ODEs, PDEs, SDEs and DDEs). (Received September 19, 2011)