1086-D5-1229   **D Scott Dillery*** (`dillerys@lindsey.edu`), Lindsey Wilson College Mathematics, 210 Lindsey Wilson Street, Columbia, KY 42718. *Design and Build of an Open Canoe: A Natural Path to Computation.*

Designing and building an open canoe has ample opportunity to work with today's computing power as it relates to Calculus. Classical techniques such as divided differences and numerical integration are utilized to approximate derivatives in data and compute non-trivial surface area and volume for designs. Newer technologies are also utilized to perform interactive techniques and to take advantage of interfaces that are now ubiquitous in the professional world. These newer technologies include spreadsheets, computer algebra systems (CAS) and sketch pads. A major computational problem is to create cross sections of an inner surface that is concentric to a compound surface that makes the outer hull. Both errors due to mathematical approximation in interpolation and due to physical limitations of the materials used in construction need to be understood. Further, the understanding of numerical approximation is put to use in checking the adherence of the physical product to the original design. Calculus topics for which some form of technological computation naturally arises include derivatives, integrals, optimization, parameterized curves, and Taylor series. This talk presents how the canoe design project was implemented in a second semester Calculus course. (Received September 20, 2012)