

1077-N5-991 **William Johnston*** (bwjohnst@butler.edu). *Teaching the Lebesgue Integral with a Calculus II Prerequisite.*

A description of a course on the Lebesgue integral, using a method first established by Percy John Daniell in 1917, further refined and concisely described in a 1950's text by Frigyes Riesz and Béla Sz.-Nagy, and explicated in detail in a 1973 Alan J. Weir text. This "Daniell-Riesz approach" succeeds in defining Lebesgue's integral (using either Lebesgue measure or any Borel measure) in a manner different from the one Lebesgue used, nearly avoiding measure theory altogether. The technique is so fundamental that undergraduates can learn the integral even as a first (independent) course on functions. The presentation will describe the results of the course taught in the undergraduate curriculum at two institutions (including material on Hilbert and Banach spaces), will show how the course only requires a Calculus II prerequisite (no longer is learning the Lebesgue integral dependent on having taken *Real Analysis I*), and will introduce a new manuscript designed specifically with this course in mind. (Received September 15, 2011)