1056-S1-1535   **Patrick J Van Fleet*** (`pjvanfleet@stthomas.edu`), 2115 Summit Avenue #OSS201, Department of Mathematics, University of St. Thomas, St. Paul, MN 55105. *Fourier Series and the Discrete Wavelet Transformation.* Preliminary report.

Fourier series are commonly used by students in physics and engineering courses. In mathematics, students might see them in a differential equations or possibly in an analysis course, but rarely elsewhere in the undergraduate curriculum. Mastery of the elementary ideas of Fourier series can be invaluable for undergraduate students – they can learn about convergence in norm or solving problems in the "transform domain." Unfortunately, unless mathematics students take a course in physics or engineering, they usually do not see how Fourier series can be employed in a wide variety of applications. Fourier series play a prominent role in the development of the discrete wavelet transformation and we have found that an undergraduate course on discrete wavelet transformations and their applications provides a nice setting for the introduction of Fourier series and their important role in filter design and signal/image processing. In this talk, we will outline how Fourier series are used to construct discrete wavelet transformations and illustrate the benefits of a concentrated study of this important mathematical tool. (Received September 22, 2009)