

An Integral Approach to Teaching History across the Engineering Curriculum

Ethan Brue
Dordt College

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The activities of technology and science never unfold independent from cultural beliefs and societal presuppositions. In other words, an engineer cannot engage in good engineering design without a coherent historical/cultural understanding. While engineers and engineering educators frequently recognize this, the most common practice in engineering curriculum is either to relegate the teaching of the history of technology to the confines of a single “humanities” course, or to simply offer a regular sprinkling of historical anecdotes and snippets relating to heat transfer, digital signal processing, soil mechanics, etc. as a pedagogical aside. In terms of educating engineers with a propensity for designing holistically, both these approaches are counterproductive. Both approaches only solidify in the minds engineering students the false notion that while engineering and history may be both good to study, these disciplines are independent from one another and not inseparably intertwined.

I will argue in this paper that the thorough study of a social history of technology and science is not simply a nicety; it is a necessity in training engineers to design holistically. However, the prevailing bifurcation of curriculum and departments at many universities (i.e. technical subjects vs. humanities/liberal arts) makes it virtually impossible to teach history of technology in an integrated manner. In this context, meeting ABET criteria 3f, 3h, and 3j requirements are at best a mammoth challenge and at worst a curricular impossibility. The development of an integral historical component in the engineering curriculum requires more than just new course development or old course modification; it necessitates interdisciplinary communication and cooperation across the boundaries of every course taken by engineering students. Finally, I will argue that teaching history in an integral manner throughout the curriculum can be accomplished through a carefully crafted history of technology “hub” course that lays a philosophical and historiographical foundation enabling relevant historical reflection in all subsequent engineering courses. I will describe a recently developed engineering course at Dordt College that is designed to construct a coherent historical framework from which the entire engineering curriculum can build on.