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Ecological Engineering Science in Undergraduate Engineering Education

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Ecological Engineering is an emerging discipline that is defined as the design of ecosystems for the mutual benefit of humans and nature. With the global population recently surpassing six billion people, and the impacts of human activity clearly reaching a global scale, it is now more important than ever to understand the effects of engineering projects and industrial society on ecosystems. Engineers and ecologists must work cooperatively to ensure that the cumulative stresses placed on regional and global ecosystems by human activities do not exceed their limits to assimilate them. In order to sustain ecosystem diversity and function, and sustain human existence at an acceptable level, human engineering and natural systems must act in harmony. This will require linkages and interactions through all disciplines of engineering, such as Agricultural, Environmental, and Industrial Engineering and science programs such as Agronomy, Earth & Atmospheric Sciences, Chemistry, and Forestry & Natural Resources. Faculty in these schools and departments have a natural disciplinary link to ecological engineering. In this paper, we will present a success story in developing a division of environmental and ecological engineering at Purdue University college of Engineering and its implication on graduate and undergraduate research education.