

Chapter 11

Engineering Pathways in a U.S. Public Institution of Higher Education: A Strategy for Fostering Student Diversity

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ABSTRACT

This chapter relates a strategy that emerged from a larger effort of a land-grant institution in the U.S. to more rapidly increase the number of international students on campus and diversify its student body through the development and implementation of pathway programs. Pathway students are international students that do not meet the criteria for direct entry into a university due to lower levels of English language proficiency and/or GPA. The authors discuss strategies for ensuring success in these endeavors.

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INTRODUCTION

The goal of this chapter is to contribute to the topic of how to increase diversity in engineering programs. Our discussion is in the context of a public private partnership in higher education developed to increase campus internationalization efforts. We begin by briefly situating our chapter in the larger context of the internationalization of engineering programs. Then, we discuss how an internationalization strategy adopted by Colorado State University (CSU), through the formation of a public private partnership, has given an opportunity to its Electrical and Computer Engineering (ECE) program to continue to enhance its diversity. Thus, following the introduction of the public private partnership at our institution, we detail a major development that came with it: the introduction of a *pathway* program in ECE for international students. We explain what a pathway program is in this context, and we focus our discussion on the development of a pathway program at the graduate level. In describing this initiative, we address the topic of turning challenges into successes, and we elaborate on the value of pathway programs in expanding diversity efforts. Finally, we offer our perspective on lessons learned for other institutions and colleagues to consider if found in a similar situation.

BACKGROUND ON INTERNATIONALIZATION IN U.S. ENGINEERING PROGRAMS

In order to make sense of the challenges and potential opportunities for U.S. engineering programs discussed later in this chapter in relation to the topic of diversity, it is important to understand some of the historical context. The exact details regarding the degree of internationalization vary significantly across institutions, engineering disciplines, and type of program (i.e., undergraduate or graduate degree programs). However, it is possible to make some generalizations, especially across large land-grant institutions that traditionally have had large engineering programs and share similar histories.

In particular, the undergraduate engineering programs of land-grant institutions, as is the case at CSU, tend to be well established because they were a major motivation for the creation of such institutions. (For more information on land-grant institutions, see <http://www.aplu.org/about-us/history-of-aplu/what-is-a-land-grant-university/>). They also have a history of serving the local state population based on the premise of providing a degree that allowed the state's population to improve their standard of living. Thus, many of the early students of such programs were first generation, and this tradition continues. Likewise, until recently, very few of these programs

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