

Creating Models in Pathways to Engineering Education

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Abstract - This paper describes the models for preparing the underprepared and underrepresented college students into Engineering Transfer Pathway and how it could be used as a model by other community colleges.

The Engineering and Technologies (E&T) Department at East Los Angeles College, established in 1945, is one of the oldest community college programs in the State of California. The E&T Department's first programs were Engineering, Construction Technology, Construction Management and Manufacturing Technology. Since then, ELAC has evolved to become one of the most comprehensive engineering programs in the state of California. Currently, the department offers 14 lower division Engineering courses and 21 courses in new Engineering Transfer program, Engineering Graphics & Design, a Land Surveying and Mapping program, and a Game Design program leading to three certificates and an Associates Science degree, the last program update was accomplished in 1979.

In the fall of 2008, a 2.5 Million dollar STEM grant was awarded to the department by the Department of Education (DOE) to build an Engineering Transfer Pathway (ETP) program at ELAC with the eventual goals of increasing student enrollment in the fields of engineering and technology and transferring them to a 4-year program. The goals of ETP were to create bridges between local feeder high schools and ELAC as well as transferring from ELAC to the universities. The program achieved this goal through outreach type courses where students enrolled in introductory courses in robotics, renewable energy systems and engineering graphics courses. These courses were offered both at ELAC and at 5-8 partnering high school campuses. These courses consisted of lecture and hands-on projects. The intent of these projects was to simulate both real and practical experience in engineering careers.

ETP's second goal was to help underprepared and underrepresented students at ELAC and surrounding communities to succeed in STEM disciplines by enrolling into precollege level bootcamps in courses such as mathematics, physics and chemistry. Through these bootcamps, students had an opportunity to improve on their knowledge and to place into a higher-level college

math, physics and chemistry courses based on their placement or course pre-requisite challenge examination score.

ETP's final goal was to increase the students' transfer rate into universities by creating a bridge for transitioning community college students to gain insight into local university programs. For example, ELAC's engineering students participated in CSU-LA's and UCLA's Undergraduate Research Experience (REU), in CSU-LA's engineering workshops sophomore students designed, built and tested a Hybrid Solar powered Tricycle.