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**FOR IMMEDIATE RELEASE**

August 23, 2010

## **EDUHSD Engineering Program Retooled**

The ever-changing nature of today's technical workplace requires that the educational curriculum be dynamic and responsive to current industry practices. The Bureau of Labor Statistics reports that employment for all engineering occupations is expected to grow by 11% between 2005 and 2016. The 1.5 million engineers employed in the U.S. in 2006 is projected to grow to more than 1.6 million by 2016. In California, the California Employment Development Department (EDD) also projects growth at or about the same level for most engineering occupations and that some technical and engineering occupations, in fact, may face a shortage due to a lack of trained candidates to replace retiring workers.

In 2007 in response to industry needs, the El Dorado Union High School District Board of Trustees established a Career Technical Education Advisory Committee to advise on development of a district master plan for a Career Technical Education (CTE) program and the restructuring of applicable current courses of study. Based on the committee's recommendations, the Board, together with administration, established a bold strategic plan for a CTE program. While many districts around the state were systematically closing their CTE programs, the El Dorado Union High School District steadfastly maintained and actually added programs with the goal to help district high school students better prepare for tomorrow's technical jobs.

The district first developed a career pathway matrix to illustrate the sequence of courses within an industry sector that a student would need to progress from an introductory course level to a concentrator course level and culminate with a capstone course that would lead to industry certification, internship, apprenticeship, and/or a postsecondary education. Courses of study were developed to align with these career pathways and reviewed by industry partners to ensure workplace relevance in the classroom.

The umbrella for the engineering sector within the district CTE program currently includes architectural design, mechanical engineering, electronics, and computer & data networking electronics, but will now include a future Manufacturing Engineering Technology (MET) program, housed at Oak Ridge High School in El Dorado Hills. A new program like MET will also require that adequate facilities be available to provide a learning environment that is contemporary to the workplace. Through Measure Q funding, the district was able to modernize and reconfigure the school's former woodworking facility to enhance the learning environment for students. Focusing on design and material sciences, Oak Ridge students will learn to take raw materials and turn them into a useful product. A soon to be completed manufacturing process lab will include several different types of automated and manual machinery where students are taught rapid prototyping and reverse engineering and learn how to work with materials by such methods as joining, molding, and plating. District high school students will also learn how to communicate their ideas through sketching and mechanical design using industry standard software programs including MasterCam and SolidWorks to apply these skills to the design, manufacturing, and tooling process.

Oak Ridge High School instructor Bob Wilson says, "I am thrilled that the focus on the career technical industry is in the spotlight providing students with added resources, state-of-the-art tools and machinery that are desperately needed to meet today's technical demands, and additional skills that will give them more career options."

An integral component of the MET program, like other CTE programs, will be the continued interaction with the district's Central Sierra Regional Occupational Program (CSROP), which will provide the capstone course ensuring that the skills and competencies taught in the classrooms will meet the needs of students interested in manufacturing engineering, yet also prepare them for other relatable careers in engineering technology.

The district anticipates that the labor market for students who complete the CTE programs of study will provide several employment options in at least four different industry sectors. Not only do the skill sets developed fit the needs of jobs in the manufacturing and product development sector, but also in engineering and design, building trades and construction, agriculture and natural resources sectors. The quality of learning provided by the experiences in the CTE program will culminate in an industry recognized certification and/or program of study with a postsecondary college or university.

Oak Ridge High School principal Steve Wehr adds that, "This is a great time for Oak Ridge High School. Thanks to the foresight of our Board of Trustees, the opportunities are even greater for students pursuing a career in these technical fields. Continued partnerships with business and industry also help us stay relevant in the classroom and provide authentic learning opportunities to better prepare our students for the future."

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