

## **CAREERS ACADEMY COURSE DESCRIPTIONS: ENGINEERING ADVANCED MANUFACTURING**

**INDUSTRIAL SURVEY- ADVANCED WELDING AND FABRICATION-** Hands on course to afford high school students the opportunity to familiarize themselves with the skills and expectations of industrial maintenance and industry related construction. Students gain working knowledge of general shop equipment, safety, oxygen-acetylene, arc, and mig welding, pipefitting and layout, blueprint reading, and employment interview skills and apprenticeship opportunities.

**CONSTRUCTION-** Hands on course to give high school students the opportunity to familiarize themselves with the skills and expectations of the construction industry and other related trades. Students will gain an understanding of general shop equipment, safety, wood working hand and power tools, framing, plumbing, and basic electrical wiring.

**CAD-(Computer assisted design/drafting)** This class will expose high school students to the world of computer design and the role it plays in today's manufacturing. Students will learn to sketch innovative designs, utilize 2D and 3D software to generate tool paths used to machine products, and basic setup procedures of CNC machines. This course is UC approved A-G.

**MACHINE TECHNOLOGY-** Students enrolled in this class will learn how to use precision measuring instruments function/meaning, parts and function of machine tools (mills, lathes, CNC machines) and industrial machine safety.

**ELECTRICAL ENGINEERING-** This class is a one year Physical Science lab class where students learn about electricity, magnetism, and electronics both in theory and application. This class integrates higher level mathematics with science and how they are used to solve real world problems. Students learn AC-DC network analysis, discrete, analog, and digital electronics and electromagnetic wave propagation. This course is UC approved A-G.

**INDUSTRIAL MAINTENANCE MECHANIC 1&2-** The New Industrial Maintenance Class at John Swett High is a two-year program of study that includes a very wide range of subjects and activities that are associated with installing and maintaining equipment found in processing and manufacturing enterprises. This is the first industrial maintenance class in a secondary school in California. The class is accredited by the National Center for Construction Research and Education (NCCER). Students will be registered with the Center, and will be certified as having completed modules found in their NCCER textbooks. In addition to the textbook subjects, which include industrial safety, hand and power tools, construction math, and rigging, students will be introduced to machining and welding processes. The industrial maintenance program at John Swett is aligned with programs at local community colleges, including Laney College in Oakland and Diablo Valley College in Pleasanton.