INFORMATION COMMUNICATION TECHNOLOGY SECTOR

Robotics Pathway (174)

Offered at El Modena, Orange, & Villa Park High School

Vocational Education Level	Course Name	Course Number	Voc. Ed Level Label
01	Exploring Computer Science (**UC-G**)	O651 *	Introductory
02	Foundations of Technology and Engineering (**UC-G**)	O605 *	Concentrator
02	C-STEM (**UC-G**)	O652 *	Concentrator
02	Robotics I	O716	Concentrator
03	Robotics II	O717	Capstone
03	Professional Internship	O745	Capstone

CTE/INFORMATION COMMUNICATION TECHNOLOGY SECTOR

EXPLORING COMPUTER SCIENCE

O651 *

This is the first course in the Information and Computer Technology (ICT) Sector Pathways. Students are introduced to the foundations of Computer Science using an inquiry-based, hands-on approach to understand and solving real world computing problems. Instruction includes the areas of Human Computer Interaction, Problem Solving, Web Design, Programming, Data Analysis and Robotics. Emphasis is placed on the creative, collaborative, interdisciplinary and problem-solving nature of computing. Upon completing the course, students will be prepared to pursue more advanced courses in the pathway, and to further their exploration of college and careers in the ICT Industry. ***Exploring Computer Science is UC approved as a "G" Elective.*** *NOTE: This course follows the National Course outline developed by UCLA and LAUSD.*

FOUNDATIONS OF TECHNOLOGY AND ENGINEERING

O605 *

Foundations of Technology and Engineering is a one-year course designed to expose high school students to a wide range of science, engineering, and technology content. The integrated units of study provide a concept driven mastery system of learning where students are engaged in hands-on projects. The course is part of the Paxton Patterson educational system. ***This course is UC approved as a "G" Elective***

C-STEM

O652 *

This course provides a formal development of the algebraic skills and concepts using interactive computing, computer programming in C/C++, and hands-on robotics. This integrated math curriculum meets both Algebra I course requirements and CTE standards. This course is meant to be an engaging support class for students concurrently taking algebra 1 or Integrated Mathematics 1. Robotics involves a variety of math and engineering concepts. Integrating robotics into the Algebra curriculum helps make abstract ideas concrete and allows students to apply mathematical concepts to real world problems. Students will study, analyze, and modify existing C/C+ programs and develop their own programs that will integrate computing and robotics with major Algebra I concepts including operations with real numbers, linear equations and inequalities, relations and functions, polynomials, quadratic equations, system of linear equations with two variables, algebraic fractions, and nonlinear

equations. Through hands- on robotics projects, students develop algebraic thinking, problem solving, effective communication, and team work skills. ***C-STEM is UC approved as a "G" Elective.***

ROBOTICS I

O716

This is an introductory course in the field of robotics. Students will explore the interaction of science and technology and learn how these concepts are applied in engineering, control systems and automation. Students will use inquiry, research, and design methods to solve problems, and construct robotic devices using industry-standard systems software and technology.

ROBOTICS II

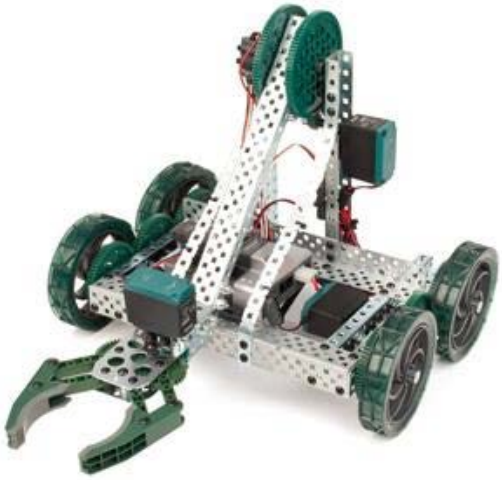
O717

This is the second course in the Robotics sequence of courses. Students will continue to explore the interaction of science and technology and learn how more advanced concepts are applied in engineering, control systems and automation. Students will use inquiry, research, and design methods to solve problems, and construct robotic devices using industry-standard systems software and technology.

PROFESSIONAL INTERNSHIP

O745

This practicum and internship course allows the students to apply academic and career readiness skills in a workplace environment. Instruction will combine standards-based classroom instruction with extended on-site industry experience. Students will learn all aspects of Professionalism, and apply 21st Century Skills of Communication, Collaboration, Critical Thinking, Creativity and Problem Solving in a real world setting. Interested students can prepare to take the WorkKeys National Career Readiness Certificate.



Canyon High School Pathways

http://www.canyonhighschool.org/academics/CTE

El Modena High School Pathways

http://www.elmodenahs.org/apps/pages/index.jsp?uREC_ID=382265&type=d&pREC_ID=879439

Orange High School Pathways

http://www.orangeusd.org/ohs/docs/pathwaysflyer.pdf

Villa Park High School Pathways

http://www.villaparkhigh.org/apps/pages/index.jsp?uREC_ID=419726&type=d&pREC_ID=917448