



COURSE SYLLABUS

Programs in Technology Education

General H.H. Arnold High School

I. COURSE NUMBER AND TITLE: **VEE406, Robotics and Mechanical Engineering**

II. CREDIT: 2 Semesters

III. PREREQUISITE: Students enrolling in this course must have normal color vision. They should also have completed, or are currently enrolled in, General Math. Exceptions granted only through consent of the instructor.

IV. COURSE DESCRIPTION: The Robotics and Industrial Technology course introduces 9th through 12th grade students to mechanisms, machines, and robotic systems. Students progress at their own pace while studying and performing tasks independently. Hands-on activities, supplemented with demonstrations and lectures familiarize students with the concepts and application of robotics and industrial technologies. Performing laboratory experiments, students will gain first hand knowledge of simple machines. Students will also learn how to program complex robotic systems to perform a variety of interesting and useful tasks.

V. COURSE OBJECTIVES:

Upon completion of this course, students should be able to

1. Understand the fundamentals of robot technology.
2. Identify the components and explain the operation of simple machines.
3. Place computers in control of machines to perform desired tasks.
4. Program robots to understand data acquisition, data handling, and conversion.
5. Describe voice synthesis and interfacing.
6. Build models that simulate industrial robots at work.

VI. COURSE OUTLINE

1. Electricity/Electronics Course Orientation
2. Gears, Legos, and Simple Machines
3. Computers in Control
 - a. Lego TC LOGO
 - b. Fischertechnik Experimental
 - c. Fischertechnik Computing
4. Robotic Fundamentals
5. AC and Fluidic Power
6. DC Motors and Positioning
7. Robot Applications
8. Industrial Robotics and Automation
9. Intelligent Machines
10. Design and Engineering

VII. CURRENT TEXTS:

ROBOTICS/INDUSTRIAL ELECTRONICS
by Heath Education Systems

ROBOT APPLICATIONS
by Heath Education Systems

GEARS, WHEELS, AND AUTOMOBILES
by MIT's Media Lab

ROBOT TRAINING SYSTEM
by Lab-Volt Systems

VIII. PREPARED: August 25, 2002