EPI Technology Course Offerings
El Camino Fundamental High School

Tech Exploration  
This is a hands-on, two semester course with an emphasis on mechanical theory, computer-aided design, and metals manufacturing. Through the application of various engineering principles students will design and construct several multi-week projects. Students will develop skills in the use of hand and power tools, AutoCAD design software, and industrial quality machinery as they are commonly used in the fields of manufacturing metals, fabrication, and construction technology. Team building and collaboration is emphasized through class competitions among students and their completed projects. This class is a pre-requisite to EPI Engineering Tech 1, and with a grade of “C” or better can be used as a pre-requisite for CADD 2 or Manufacturing Metals Technology 2.

Pre-Engineering Tech 1  
Pre-Engineering Tech I is the first course of the career path in the Pre-Engineering Academy. The course is an exploratory course which will introduce the students to the basic principles of engineering. Through the use of hands-on projects, the students will begin their studies of technical drawing, electricity and electronics, manufacturing/construction, power and energy, and the design process.

Pre-Engineering Tech 2/CAD  
Pre-Engineering Tech 2 is the second course of the career path in the Pre-Engineering Academy, otherwise known as the Eagle Polytechnic Institute (EPI). The course is a multifaceted course that will continue the student’s learning process into the principles of Engineering. Through the use of hand-on projects, the student will pursue their studies of technical drawing, electricity and electronics, manufacturing and construction, power and energy, and the engineering design process. Projects developed will include a model bridge, an anemometer, a kite, a glider, water walking shoes, a web site, a rocket, and more.

Pre-Engineering Tech 3/Construction Technology  
Pre-Engineering Tech 3 is the final course in the E.P.I. pre-engineering series. This class is designed to prepare students for college engineering lab courses. Through large scale projects that involve engineering design and project planning, students will study and develop skills in construction and metals technology. Students will use the Master Cam program to learn how to program CNC machine tools. Students will learn carpentry technology, use of basic and precision measuring instruments, basic hand and power tools; participate in reading blueprints, wood framing, electricity concepts, and circuitry. Safety procedures will be covered. Students will have the opportunity to use tools and lab equipment to design and produce projects for their E.P.I. physics and E.P.I. English courses. This class is combined with Manufacturing Metals Tech 2 and 3. Students may have the opportunity during the second semester to earn CSU transferrable units (3 units of college credit) for the American River College course “Welding 300”.

EPI 9th
EPI 10th
EPI 11th
EPI 12th
Additional El Camino High School Tech Courses
The courses listed are 1 – 2 semesters. Some of the courses listed have prerequisites. See the El Camino Course Description Book for more information.

**RADIO AND TV**
Grade Level: 9-12
This is a one year course in Radio and Television concepts with an emphasis on production skills, such as playback, recording, mixing, microphone use, SFX, video recording, composition, and script mechanics. Students who demonstrate exceptional aptitude and attitude are invited to join KYDS and/or LoDown Productions as a staff member in Directed Study.

**DIRECTED PROJECT/RADIO**
Grade Level: 10-12
By contract and under the direction of the KYDS General Manager, students utilize their skills in all phases of a radio station’s operations, including: on-air personality, production, administration and maintenance. Students also have the opportunity to serve the station as departmental officers and station managers. Students are required to attend station staff meetings and work outside class hours to complete broadcast production assignments.

**ADVANCED RADIO/TV**
Grade Level: 10-12
By contract and under the direction of the instructor, students utilize their skills in all phases of a TV station’s operations, including: booth control and camera operation, tape editing and presentation; tape delay, live and remote production; and station administration and maintenance. Course is offered only 5th period. Additionally students will be required to attend station staff meetings and work outside class hours to prepare production elements for closed-circuit broadcasts.

**DIRECTED PROJECT/TELEVISION**
Grade Level: 11-12
This is an advanced course in television production and management. By contract and under the direction of television station faculty, students will acquire and utilize television station management skills in the areas of directing, editing, sound, production and studio management. Students are required to attend station staff meetings and work outside class hours to complete production assignments. Students also serve the station as officers in each of the major production departments.

**COMPUTER ASSISTED DESIGN/DRAFTING 1**
Grade Level: 9-12
This is an exciting introductory course designed for the creative novice student who has a future occupational interest in Architecture or Engineering. The student will learn to utilize basic 2-dimensional computer aided drawing techniques in the development of various engineering and residential design projects related to the fields of architectural and mechanical engineering. It is not necessary that students have an understanding of traditional drafting before enrolling in this course.

**COMPUTER ASSISTED DESIGN/DRAFTING 2**
Grade Level: 10-12
This is a challenging design course intended for the advanced student who has a future occupational interest in Architecture or Engineering. The student will learn to utilize advanced 2-D and 3-D computer aided drawing techniques in the development of various engineering and commercial building projects related to the fields of architectural, structural and mechanical engineering. It is necessary that students have passed CADD 1 with a grade of “C” or better, or have instructor approval before enrolling in this course.
**MANUFACTURING TECH: METALS 1**
Grade Level: 9-12
Metals Technology explores how humans use the material known as metal to shape the world we live in through new technology. Students will gain skill and knowledge of the material, tools, and equipment of the metal working industry by hands on project fabrication. Basic automotive maintenance and repair along with basic engine principals will also be covered. The areas of sheet metal, measurement, oxygen-acetylene welding/brazing, fabrication, art metal, and manufacturing careers will all be explored.*

**MANUFACTURING TECH: METALS 2**
Grade Level: 10-12
Metals Technology II explores how humans use the material known as metal to shape the world we live in through new technology. Students apply their knowledge and skills acquired from Manufacturing Metals Technology I to gain more experience with material, tools, and equipment of the metal working industry by hands on project fabrication. The areas of sheet metal, precision measurement, and electric welding processes including GMAW, SMAW and PAC will be heavily emphasized as well as basic Machining. Careers and design will also be further explored. Your help in providing needed supplies in the classroom is greatly appreciated but not required. Students will not be denied an educational opportunity if a donation is not received.* If students create items in class, they may be allowed to take those items home with them as personal property, but the student will need to pay a fee for the direct cost of those materials.

**MANUFACTURING TECH: METALS 3**
Grade Level: 11-12
Third year Metal Technology students skills will be challenged on every manufacturing level throughout the duration of two semesters. Welding processes including GMAW, SMAW, GTAW, PAC, and OAC will be heavily practiced. Weld Inspection, Weld Symbols, and different Weld Types, Patterns, and Positions will be covered through hands on project fabrication. Advanced precision measurement and Machining techniques will also be skills that students build with machines including metal lathes, milling machines, surface grinders and presses.

Students will learn CNC programming using MasterCam CAD software. This class is combined with Manufacturing Metals Technology 4 and Pre-Engineering Technology 3. Students have the opportunity to earn 3 CSU transferrable credits for the American River College course “Welding 300”. Your help in providing needed supplies in the classroom is greatly appreciated but not required. Students will not be denied an educational opportunity if a donation is not received.*

**ADVANCED STUDIES METALS**
Grade Level: 12
Fourth year Metal Technology students will practice heavy welding and machining by hands on project fabrication on much larger scales. Structural design and integrity will be practiced through the fabrication of roll around tool cabinets, equipment support devices and large scale school community projects including cabinetry, carpentry, and wood framing. Application of the MasterCam program by implementing the software into computer controlled machining equipment will open the doors to the world of CNC machining. Challenging art projects will be assigned that include bearing mechanics and clearance/tolerance concepts. Additional welding projects using SMAW, GTAW, PAC and OAC will be further practiced. This class is combined with Manufacturing Metals Technology III and Pre-Engineering Technology III. Students may have the opportunity during the second semester to earn 3 CSU transferrable credits for the American River College course “Welding”.*

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