ENGINEERING AND DESIGN TECHNOLOGY

Digital Electronics (DE) ***PLTW***
Grades 11-12 ***Full year/2 honors credits***
Prerequisite: Introduction to Engineering Design (IED) recommended; may be taken at Grade 10 with instructor approval
Using project based activities, students will:

- analyze, design and build digital electronic circuits using technology such as robots, sensors and motor controls.
- focus on the fundamentals of electronic devices such as cellular phones, MP3 players, laptops/tablets, HD TV, etc.
- use teamwork, communication skills and technical documentation.

Engineering Design and Development (EDD) ***PLTW***
Grades 11-12 ***Full year/2 honors credits***
Prerequisite: Introduction to Engineering Design (IED) and 1 additional PLTW course
Students will:

- work in teams to design and develop an original solution to a valid open-ended technical problem by applying the engineering design process.
- perform research consulting experts to choose, validate, and justify a technical problem and design, build, and test their solution.
- present and defend their solution to an outside panel.

CAREER & TECHNICAL EDUCATION AT A GLANCE

Did you know . . .

- the average high school graduation rate for students who concentrate in CTE programs is 90.18% compared to an average national freshman graduation rate of 74.9%.
- CTE courses expose students to relevant information and provide them with opportunities to apply academic skills to their interests.
- 18 of the 20 fastest-growing occupations within the next decade will require a career and technical education background and training.
- students may qualify to earn college credit and/or professional certifications while taking selected CTE courses.

Source: www.isbe.net

Cooperative Internship Available
See Business and Computer Education Brochure for Details

PREPARE FOR SUCCESS AFTER HIGH SCHOOL

What does it mean to be college and career ready?

CTE courses are aligned to the Common Core Standards and ACT Career Readiness Standards. Upon completion of CTE courses, students will possess the following skills:

- Knowledge of different types of technology and media used in the business world today.
- Understand and apply transferable employability skills.
- Understand how different cultures relate and interact in a global society/economy.
- Demonstrate life-skill independence.
- Apply math skills in relation to the workplace.
- Apply literacy and communication skills in relation to college and careers.

**Articulation Credit National Certification*

How does articulation/certification work?

1. Take a **FREE** articulated class at any U-46 school.
2. Earn a grade acceptable to the institution (ECC, Lincoln Tech).
3. Schools will grant college credit for each articulated class taken, thereby saving time and money on college tuition!
4. Prepare for available certification exams.

Note: Articulation agreements are reviewed and updated every two years; consult the school website for details.

For more information, contact a **Technology Education** faculty member.

To enroll in a Technology Education course, contact the **Guidance Department**.

Questions? Contact U-46 CTE Coordinator
847-888-5000 Ext. 5310

Technology Education . . .

U46 ACADEMIC SUCCESS FOR ALL

Our aim: College and Career Readiness…

An investment in your future!

MANUFACTURING AND DESIGN TECHNOLOGY

Production Technology
Grades 9-12 ***Semester/1 credit***
Students will:
- use problem solving skills to produce a product(s) incorporating design, materials, processes, tools and equipment.
- use wood, metal, and/or plastic to produce peg games, stools, shelves, emblems, logos, etc.

Precision Manufacturing
Grades 10-12 ***Full Year/2 credits***
Students will:
- be introduced to entry level skills in the manufacturing and design fields.
- actively engage in project-based hands-on activities including blue print reading, precision and semi-precision measurement, lathe, mill, surface grinder and CNC machines
- prepare for industry supported certifications such as NIMS (National Institute for Metalworking Skills).

Advanced Precision Manufacturing
Grades 11-12 ***Full year/2 periods/4 credits***
Prerequisite: Precision Manufacturing
Through hands on integration and technology, students will:
- advance their techniques and build additional skills on manual and CNC equipment.
- create opportunities for additional national certifications.

Note: This course may be taken as a 1 hour, full-year class, 2 credits, with instructor consent. This course may be repeated for a second time for credit enabling a student to gain more career skills and additional national certifications.

Production Woods
Grades 10-12 ***Full year/2 credits***
Students will:
- gain an understanding of career opportunities in the woodworking industry.
- create products incorporating design and planning, wood technology techniques, and finishing techniques.
- develop skill using various woodworking machinery and tools.

Advanced Production Woods
Grades 11-12 ***Full year/2 periods/4 credits***
Prerequisite: Production Woods
Through hands-on integration and technology, students will:
- practice commercial production techniques, custom millwork, and large run productions.
- develop skills in processes and techniques with wood and other materials.
- prepare for industry supported WoodLINKS certification.

Note: This course may be taken as a 1 hour, full-year class, 2 credits with instructor consent.

Metals Technology
Grades 10-12 ***Full year/2 credits***
Through hands-on integration and practice students will:
- practice welding blocks, duct work, casting products, oxygen/acetylene cutting and metal fastening methods.
- preview metal working processes and career opportunities in the field.

MANUFACTURING AND DESIGN TECHNOLOGY

Advanced Metals Technology
Grades 11-12 ***Full Year/2 credits***
Prerequisite: Metals Technology
Students will:
- advance skills including ARC, MIG, and TIG welding.
- acquire skills in plasma cutting and blue print reading.
- practice out of position welding, aluminum welding, welded sculptors and nut and bolt miniatures.
- design and fabricate a product.

Electrical Fundamentals
Grades 9-12 ***Semester/1 credit***
Students will:
- be introduced to wiring symbols, soldering techniques, AC/DC circuit analysis of current/voltage/resistance.
- use digital multimeters, oscilloscopes, and power supplies to analyze circuits.
- be introduced to career opportunities.

AUTOMOTIVE TECHNOLOGY

Automotive Fundamentals
Grades 9-12 ***Semester/1 credit***
Students will:
- learn fundamentals of engine operation, electrical functions, and vehicle maintenance and care.
- be introduced to multiple automotive systems, their function and importance.
- use problem/project based shop activities integrating various forms of technology.

Automotive Technology
Grades 10-12 ***Full year/2 credits***
Students will:
- combine lab work with related instruction in the four National Automotive Technicians Education Foundation areas.
- focus on electrical/electronics, brakes, steering and suspension, engine design, construction and performance.
- demonstrate use of hand tools, power tools and automotive diagnostic equipment.

Advanced Automotive Technology
Grades 11-12 ***Full year/2 credits***
Prerequisite: Automotive Technology
Students will:
- use a variety of testing devices, equipment and specialty tools to supplement their learning in the 4 NATEF areas of advanced systems diagnosis.
- apply intermediate testing and diagnostic techniques on electrical systems, fuel injection, ignition, computer systems, suspension, steering and brakes.
- prepare for ASE (Automotive Service Excellence) testing.

***Articulated credit is available. See back of brochure for details.**

AUTOMOTIVE TECHNOLOGY

Automotive Service
Grade 12 ***Full year/2 periods/4 credits***
Prerequisite: Advanced Automotive Technology
Students will:
- prepare for a career in the automotive field and ASE (Automotive Service Excellence) testing.
- engage in diagnosis of vehicles in a repair facility atmosphere using a variety of testing instruments and specialty tools.
- develop advanced skills in electrical, fuel injection, ignition, computer systems, emissions, steering/suspension, brakes and engine performance.

ENGINEERING AND DESIGN TECHNOLOGY

Intro to Engineering Design (IED) ***PLTW***
Grades 9-12 ***Full year/2 honors credits***
Through project, problem based activities, students will:
- explore the design process, solid modeling, design and development and Computer Aided Drafting (CAD).
- use team focused opportunities to develop innovative designs involving real world products.

Principles of Engineering (POE) ***PLTW***
Grades 10-12 ***Full year/2 honors credits***
Prerequisite: Introduction to Engineering Design (IED)
Using a combination of teamwork and problem solving skills in hands-on projects, students will:
- apply physical principles, robotics and mechanical exploration.
- experience major concepts in post-secondary courses of study in medicine, engineering, business, architecture, manufacturing and science.

Civil Engineering and Architecture (CEA) ***PLTW***
Grades 10-12 ***Full year/2 honors credits***
Prerequisite: Introduction to Engineering Design (IED), Principles of Engineering (POE) recommended
Students will:
- study design and construction of residential and commercial buildings including building components and systems, structural design, site and green design.
- use Computer Aided Design software (CAD).
- prepare for careers or further study in architectural design, civil engineering, and the construction field.

Computer Integrated Manufacturing (CIM) ***PLTW***
Grades 10-12 ***Full year/2 honors credits***
Prerequisite: Introduction to Engineering Design (IED), Principles of Engineering (POE) recommended
Using problem solving, teamwork, and realistic applications, students will:
- explore how all things go from design to production by identifying and learning how computers and machine connections are creating global change.
- prepare for careers or further study with current and emerging technologies.