TECHNOLOGY EDUCATION

Technology education in the Downingtown Areas School District incorporates problem solving. It involves students gathering, questioning, evaluating information, drawing conclusion, and acting responsibly on the results as they impact on the students' environment. Technology education is an integral part of the education of each student. It is a comprehensive activity-based program that is concerned with understanding the evolution, application, and significance of technology. Students who enroll in any technology education course should be prepared to pay either a lab fee and/or for materials used in the course.

COMPUTER AIDED DRAFTING COURSES

CAD I

$10 lab fee

7016 | 5 pds/cycle | .83 credits | Grades 9-10-11-12

Students gain basic understanding of technical graphics communication and computer-aided engineering design through use of computer-aided design/drafting software. Fundamentals of engineering graphics techniques, principles of computer-aided design and drafting, concepts of CAD modeling and application in engineering design, and a hands-on-experience of using modern CAD software are introduced in the course.

CAD II

Prerequisite: CAD I
$10 lab fee

7027 | 5 pds/cycle | .83 credits | Grades 10-11-12

CAD II is a level two CAD course for those individuals interested in pursuing CAD as it relates to mechanical engineering and machine design. Students learn advanced CAD concepts such as advanced drawing setups, 3-D modeling, and rendering. Students use a high quality wide formal plotter to print their rendered images.

RESIDENTIAL ARCHITECTURE

$10 lab fee

7038 | 5 pds/cycle | .83 credits | Grades 9-10-11-12

Residential Architecture is the course for students interested in CAD as it relates to creating architectural plans. In the first half of the course students create floor plans, various sections and elevations. In the second half students create presentation plans of the house using 3-D and wide format printing methods.

DESIGN ARCHITECTURE

Prerequisite: Residential Architecture
$10 lab fee

7049 | 5 pds/cycle | .83 credits | Grades 10-11-12

Design Architecture is the course for those individuals interested in architecture as a possible career. The first half of the course requires students redesign their plans created in Residential Architecture. The second half requires students to create advanced, realistic concepts of their designs. Students produce photographic quality prints using wide format printing techniques.

ELECTRONICS COURSES

ELECTRONICS I

7116 | 3 pds/cycle | .5 credits | Grades 9-10-11-12

$5 lab fee

Electronics I is an elective course open to all students. Those interested in pursuing an Electrical or Electronics related career, including engineering should consider this course for its practical hands-on experience. The course deals with familiarization and use of the lab equipment to complete a design project. Students study direct current (DC) electricity in relation to the design of a project from scratch. They also use computer-aided design software during the design phase of the project to generate a schematic and printed circuit board layout. The project is then constructed and tested. Project building, both self-designed and from kits, basic DC and AC electrical theory and experimentation, and circuit fundamentals are featured in this course.

ELECTRONICS II

Prerequisite: Electronics I "C" or better

$5 lab fee

7127 | 5 pds/cycle | .83 credits | Grades 10-11-12

This course involves a more in-depth exploration of DC and AC electrical theory, including DC circuit analysis, an introduction to the oscilloscope and AC fundamentals. Mainstays of the course include the completion of passive component study, such as capacitors and inductors, and the introduction of solid-state components, such as diodes. The course also introduces students to electronic systems. Project work is required in the course. Students will build a project with more complexity than those built in Electronics I. Discussions are held about how the projects operate. Project building, DC and AC electrical theory and experimentation, and solid state fundamentals are featured in this course.

ELECTRONICS III

Prerequisite: Electronics II "C" or better

$5 lab fee

7138 | 5 pds/cycle | .83 credits | Grades 11-12

This course continues the in-depth study of Electronic components started in the previous course. Individual solid-state components as well as Integrated Circuits (IC) are studied. A "block" or "systems" approach to understanding electronic devices is used. A project is not required. One may choose to do independent study instead, in an area of electronics that is of interest to the student. The study may include linear, digital, or even computer-based electronics. Independent study, solid-state devices, and electronic systems are featured in this third level course.

GRAPHIC ARTS COURSES

GRAPHIC ARTS I

$10 lab fee

7216 | 5 pds/cycle | .83 credits | Grades 9-10-11-12

Students will explore the technological aspects of the major printing processes. The introduction of process photography affords everyone the chance to gain first hand experiences in graphic arts photography. Students are introduced to desktop publishing through the use of Macintosh computer system, CD ROM, scanner digital camera, Internet and laser printer. Each student will work in both offset and screen process printing technology. In addition, students will complete a multimedia presentation, which can be recorded onto videotape for portfolio submission.

GRAPHIC ARTS II Prerequisite: Graphic Arts I
$10 lab fee

7227 5 pds/cycle .83 credits Grades 10-11-12

Students explore computerized darkroom techniques with emphasis on multi-color screen process and offset lithography. Advanced typesetting, layout and design techniques are major components of this class. Students explore advanced desktop publishing techniques with emphasis on networking data and file sharing. Each student will complete an instructional multimedia presentation or electronic portfolio.

GRAPHIC ARTS III Prerequisite: Graphic Arts II
$10 lab fee

7238 5 pds/cycle .83 credits Grades 11-12

Students electing Graphic Arts III are involved in a research and development problem dealing with a product or process of their interest. Each student will set his or her goals for the research and must complete a major project and presentation dealing with their findings.

MANUFACTURING COURSES

INTRODUCTION TO MANUFACTURING TECHNOLOGY

7326 5 pds/cycle .83 credits Grades 9-10-11-12

The Introduction to Manufacturing Technology course provides students with an introduction to: (1) manufacturing materials and processes, (2) organizing, financing, and managing an enterprise, (3) researching and developing products, (4) producing products, (5) marketing products, and (6) closing the enterprise. Students engage in an activity-centered study of the specific tasks in a laboratory setting.

MANUFACTURING SYSTEM DESIGN Prerequisite: Intro. To Manufacturing is helpful but not necessary

7337 5 pds/cycle .83 credits Grades 10-11-12

The Manufacturing System Design and Engineering course provides students with a comprehensive introduction to: designing, engineering, and testing systems used by manufacturing enterprises to product products to meet the needs and wants of consumers. Emphasis is placed on an activity-centered study of the specific tasks associated with (1) establishing production methods, (2) engineering manufacturing facilities, (3) designing and fabricating tooling, (4) developing quality and production control systems, and (5) operating manufacturing systems.

MANUFACTURING MATERIALS AND PROCESSES Prerequisite: Intro. To Manufacturing is helpful but not necessary

7348 5 pds/cycle .83 credits Grades 10-11-12

The Manufacturing Materials and Processes course provides students with an introduction to: (1) properties of industrial materials, (2) production of standard stock or industrial materials, and (3) transformation of standard stock into finished products. Students engage in an activity-centered study of the types and characteristics of engineering materials and the concepts common to processing polymeric and composite materials.

PHOTOGRAPHY COURSES

PHOTOGRAPHY I

$20 lab fee

7416 | 3 pds/cycle | .5 credits | Grades 9-10-11-12

Photograph I is an elective course open to all senior high students who have an interest in exploring the field of Black and White photography. Students will study types of cameras and accessories, light sensitive materials, black and white processing, printing processes, history of black and white photographic composition, and portrait techniques, and the introduction of digital portfolios. The activities of the course are designed to become progressively more challenging. Each student is required to have a 35 mm film camera. No previous knowledge of photography is required.

PHOTOGRAPHY II

Prerequisite: Photography I or Digital Photography

$20 lab fee

7427 | 5 pds/cycle | .83 credits | Grades 10-11-12

Photography II is an elective course open to any senior high student who has obtained a "C" or better in Photography I and is interested in exploring advanced Black and White techniques and introductory color photography. Color films, transparencies, and paper are studied and used in the course. Activities are experimental in nature and afford the student the opportunity to process and print color films, slides, large format cameras, video production, and digital cameras with advanced techniques in digital PhotoShop production and create a digital portfolio. All students are required to prepare a digital portfolio of their work and display their photographs during the Photography Arts Show. All students are required to have a 35 mm film camera.

PHOTOGRAPHY III

Prerequisite: Photography II

$20 lab fee

7438 | 5 pds/cycle | .83 credits | Grades 11-12

Designed with a variety of problem-solving activities, Photography III covers infrared photography and commercial photography by using the 4 x 5 view camera, portrait techniques, advanced digital techniques and computer enhancement. All students are required to prepare a digital portfolio of their work and display their photographs during the Photography Arts Show. Photography III is an elective course open to any senior high student who has obtained a "C" or better in Photography II and I. All students are required to have a 35 mm film camera.

DIGITAL PHOTOGRAPHY I

$20 lab fee

3 pds/cycle | .5 credits | Grades 9-10-11-12

Digital Photography I is an elective course open to all high school students who have an interest in exploring the field of digital photography. Students will study types of cameras and accessories, black & white and color photography, inkjet and online printing processes, photographic composition, portrait techniques, and the introduction of PhotoShop software. The activities of the course are designed to become progressively more challenging. Each student is required to have a digital camera with removable memory. No previous knowledge of photography is required.

POWER AND ENERGY COURSES

EXPLORING POWER AND ENERGY

$10 lab fee

7516 3 pds/cycle .5 credits Grades 9-10-11-12

An introduction to energy courses and their impact on the environment. Students will explore small engine and possible applications. Students may also perform modular experiments with mechanical power, fluid power, electrical power, and solar/alternative energy.

TRANSPORTATION SYSTEMS

Prerequisite: Exploring Power and Energy

$10 lab fee

7527 5 pds/cycle .83 credits Grades 10-11-12

A study of various transportation systems in our society. The course reviews the history of transportation as well as basic concepts, safety issues, and possible careers. The problems, impacts, and future trends of land, water, air, and space transportation will be investigated. Students may be required to do a project related to one or more transportation systems.

TELEVISION STUDIO COURSES

VIDEO APPLICATIONS

$10 lab fee

7549 3 pds/cycle .5 credits Grades 9-10-11-12

Video Applications is a course that provides students an opportunity to create and apply video clips, still photos, music, and an assortment of special effects to create professional quality videos. The content includes, but is not limited to, video technology theory, video camera techniques, nonlinear editing, pre-production procedures, composition, lighting, careers in media, and Internet broadcasting. Students focus on the everyday uses of video technology. Students must have home access to a video camera to enroll in the course.

TV STUDIO

$10 lab fee

5760 3 pds/cycle .5 credits Grades 9-10-11-12

TV Studio is a course that provides students the opportunity to experience the process of producing a live news show. Students work together as a team to produce the school's news show. Throughout the school year, students perform the duties of all types of positions needed to successfully perform a live broadcast. The content includes, but is not limited to: studio equipment, camera techniques, composition, lighting, editing, and key personnel. Students should have home access to a video camera.