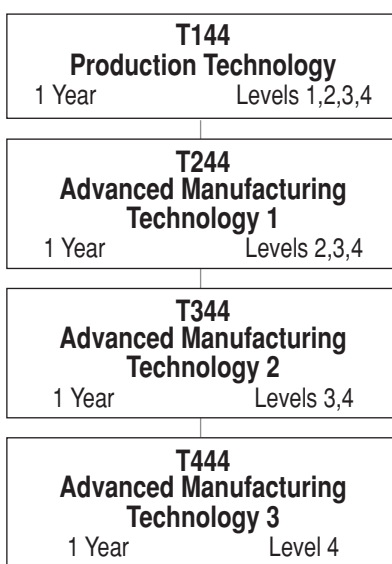


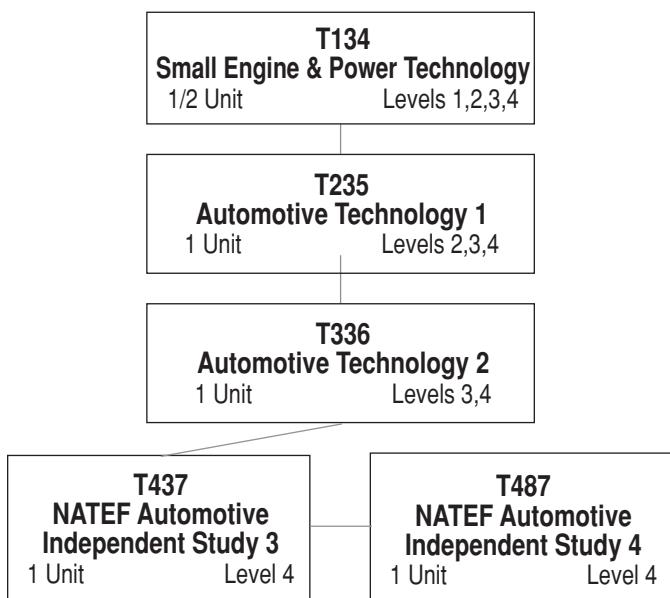


Applied Technology

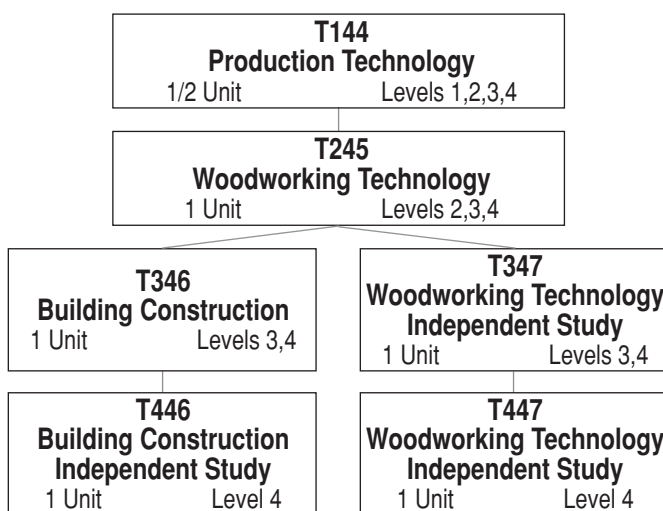
Advanced Manufacturing Technology



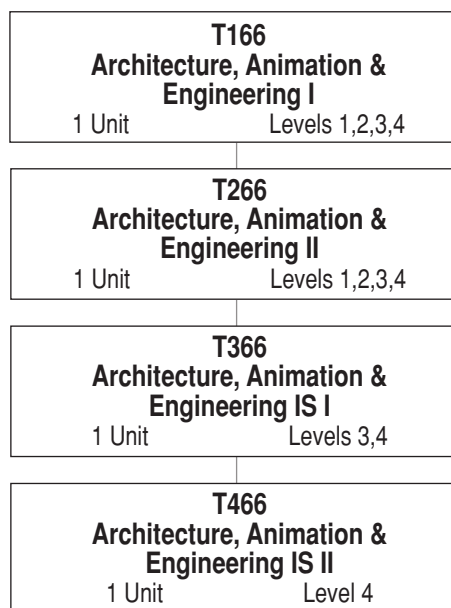
Automotives



Carpentry/Building Construction



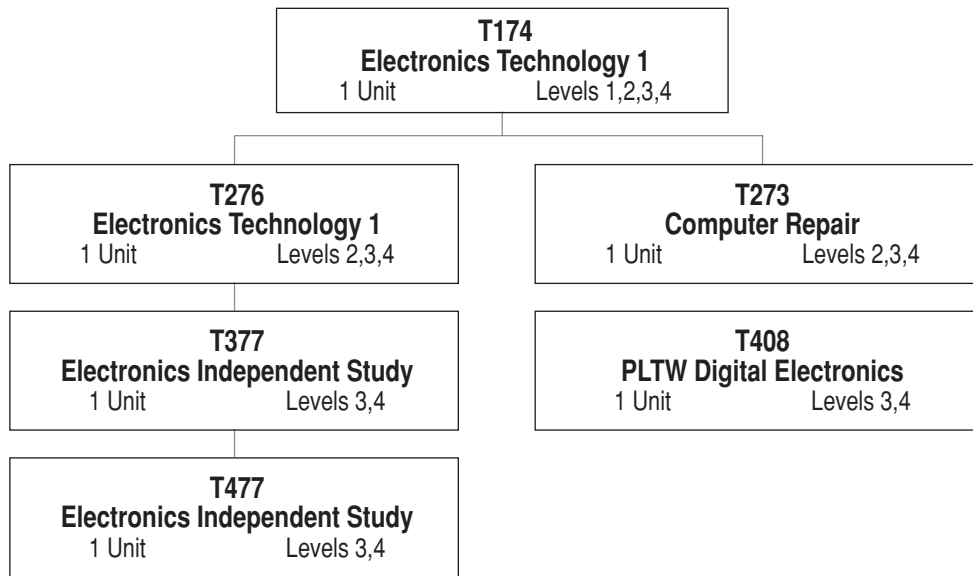
Computer Aided Design *Architecture, Engineering, Animation*



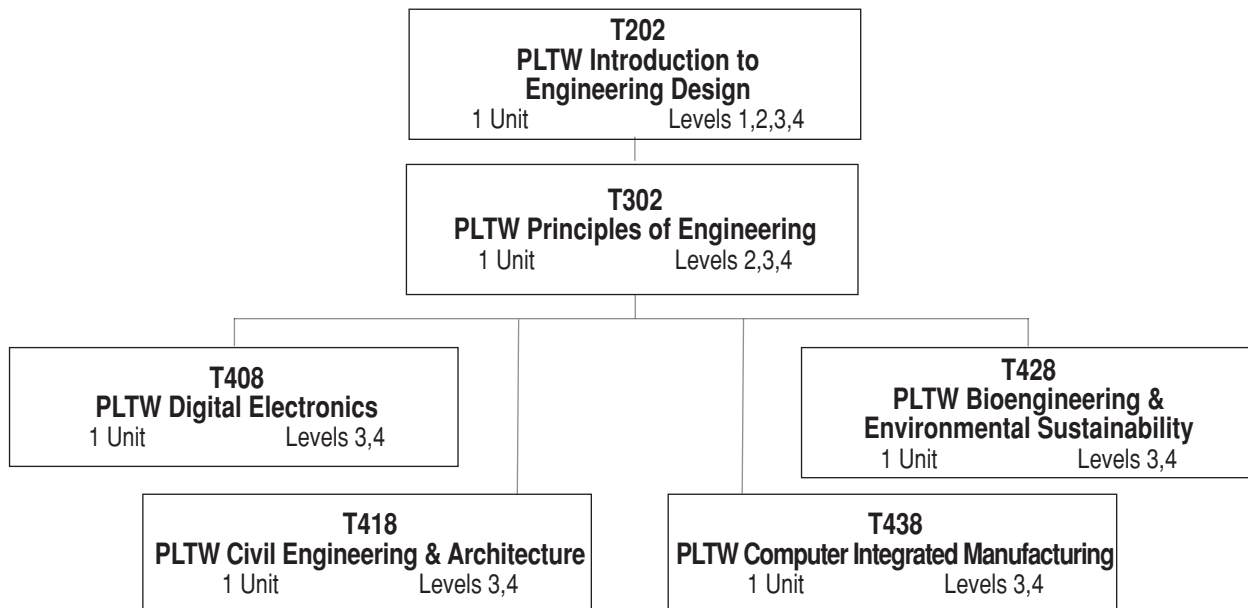


Applied Technology (cont'd.)

Electronics



PLTW Engineering



Offered at PHS and SHS

Applied Technology courses are designed to give students an exposure to technical environments and their applications in the modern work world. Through careful selection, students may explore areas of career interest. Many courses in the Applied Technology field are accepted as electives for college admission.

T130 Applied Technology Exploration LEVEL: 1,2

One year One unit
PREREQUISITE: Placement through staff conference recommendation.

This course is designed to help students with special needs acquire skills to be successful. Emphasis will be placed on basics such as: organizational skills, measuring, reading working drawings, shop safety, basic math, tool identification and usage, and following a sequential plan of action. This class is organized to provide for small group and individualized instruction with class projects varying depending on student's abilities.

T134 Small Engine & Power Technology LEVEL: 1,2,3,4

One-half year One-half unit
Students will gain an understanding of the operation of piston engines, basic electrical circuits, hydraulic, and pneumatic principles with emphasis on small engine repair. Hands-on experience includes the opportunity to participate in the repair of a variety of small engines. *Recommended but not a prerequisite for T235.*

T144 Production Technology LEVEL: 1,2,3,4

One-half year One-half unit
Production Technology is a lab oriented class in which several materials including wood, metal, and plastic will be used for both custom-made and mass produced products. Students will use a variety of hand and power tools as they learn about modern production technology. *Recommended but not a prerequisite for T244.*

T166 Architecture, Animation and Engineering Design I LEVEL: 1,2,3,4

One year One unit
PREREQUISITE: LEVEL 1 with concurrent enrollment in Algebra or successful 8th grade Algebra completion.

In the T166 course, students will be exposed to three different content areas: engineering, architecture, and animation. Students will be using Autodesk Inventor to learn about engineering drafting in both 2D and 3D environments. Students will create, develop, and test the function of their designs within the engineering software. Students will utilize Chief Architect for the architectural portion of the class in which they will focus on residential floor plan design. Students will learn about traffic flow, the three main areas of a home, proper design of homes, building codes and many other architecture related topics. Finally, in animation students will use Autodesk 3D Studio Max in which they will create animations of their creations they developed in both engineering and

architecture. This will include students creating several short length animations.

T174 Electronics Technology 1 LEVEL: 1,2,3,4

One year One unit
This course is designed for students interested in electronics technology, digital communications, audio technology, industrial technology applications, and electronic design. Students will study safety, basic components and symbols, electrical fundamentals, instrumentation, circuit analysis, semiconductor applications, and digital technology. Students will assemble and analyze electronic circuits including power supplies, oscillators, amplifiers, and digital circuits. Emphasis is placed on problem solving and teamwork in a lab environment. *T67402: Harper College Course ELT110, Introductory Electronics, 4 college credit hours.*

T200 Vocational Concepts LEVEL: 2

One year One unit
(Hoffman Estates and Palatine High Schools Only)
PREREQUISITE: Placement through staff conference recommendation.
This course is designed for students with special needs. The main goal is to teach students the basic work skills which include proper vocabulary, social skills necessary for the workplace, job skills, computer skills, and money/banking skills. This class offers a general introduction to these areas.

T202 PLTW Introduction to Engineering Design LEVEL: 1,2,3,4

One year One unit
PREREQUISITE: Concurrent enrollment in M217 Geometry or higher
The Project Lead the Way (PLTW) course, Introduction to Engineering Design is an interdisciplinary study with an emphasis placed on learning the design development process. Students utilize their creativity to collaborate with other students through distance learning projects. In this course students develop the essential skills that engineers rely on everyday such as patent research, working with team members, hand-sketching, and proper engineering documentation with team members. Students apply the Design Loop to innovate and invent products in a continuous improvement model. State of the art technology including Autodesk's Inventor, ANSYS, 3D Printing and ShopBot industrial automation, is used to allow students an opportunity to create prototypes and mock-ups of their individual and team solutions.

*C*reativity requires the courage to let go of certainties.

- Erich Fromm
Social psychologist and philosopher

It's kind of fun to do the impossible.
- Walt Disney

T235 Automotive Technology 1

LEVEL: 2,3,4

One year One unit
Auto Technology 1 covers theory of operation and care of the basic components of the modern automobile. Areas of study include engines and engine systems, brakes, and suspensions. Hands-on activities consist of working with actual automotive parts and work on live cars. This course is a prerequisite for T336 Auto Technology 2 and stresses entry level job skills. It is recommended for students interested in becoming an automotive technician, as well as for those who wish to learn basic automotive repair for personal use. *ASE Certification Prep; NATEF Certified Program.*

T244 Advanced Manufacturing Technology Level 1

LEVEL: 2,3,4

One year One unit
Students will work towards industry standard certifications in the area of precision machining based on the National Institute of Metalworking Skills (NIMS). Students will develop the skill set and knowledge that employers want when hiring people in the manufacturing industry. Students will be prepared to take NIMS credential tests in: 1) Measurement, materials, and safety 2) CNC Operator: Milling Level 1 and 3) CNC Operator: Turning Level 1. Students will be learning and operating industry standard Computerized Numerical Control machines that cut steel. NIMS operates under rigorous and highly disciplined processes as the only developer of American National Standards for the nation's metalworking industry accredited by the American National Standards Institute (ANSI). Students will learn concepts in the Manufacturing Skills Standards Council curriculum in the four areas: Safety, Measurement & Continuous Improvement, Manufacturing Processes and Maintenance Awareness. *Harper College MFT105 (T64201) Machine Processes I, 2 college credit hours; MFT120 (T64202) Machine Processes II, 3 college credit hours.*

T245 Woodworking Technology

LEVEL: 2,3,4

(Level 1 with instructor approval)

One year One unit
Woodworking Technology is designed for the beginning to intermediate student. This one-year course includes instructional units in safety, layout and measurement, equipment and processes, cabinet making, furniture construction, lathe turning, and career/consumer awareness. These hands-on units are geared for preparing students for future courses as well as helpful household knowledge of wood working procedures. Project material fees are required and vary with the various project selections.

T250, T350, T450

Cooperative Work Training **LEVEL: 2,3,4** *(Students also must enroll in T260, T270, T280, or T290 Work Experience)*

One to three years Two units per year
This Cooperative Education program is for students 16 years of age or older who have been in general or special education courses and are interested in developing job skills. Daily classroom activities are planned to help students strengthen their communication skills, adjust to a work situation, and develop skills for the jobs they are learning.

Community training stations are in semiskilled and service occupations. These are selected with the student's abilities and interests in mind. Acceptable training positions include service station attendants, grocery checkers, custodial work, construction work, nursery and greenhouse work, and other semiskilled jobs. Students who find it difficult to hold a job in the community may be employed by the school district to gain the experience and confidence needed to keep a full-time job. The first year of this course satisfies the District 211/State requirement for Consumer Education.

T266 Architecture, Animation & Engineering II

LEVEL: 1,2,3,4

One year One unit
PREREQUISITE: Computer Aided Drafting and Graphics T166
In the T266 course, students will further their knowledge in the three content areas: architecture, engineering, and animation. The first semester will be broken down into a series of 6 week sessions, touching base on each of the three content areas. The engineering session focuses on complex assemblies and specialty views. The architecture session focuses on architectural home styles, the reading of plan sets, and framing. The animation session focuses on continuing students' ability to model, set cameras, and create more detailed short length animations. During second semester students are able to pursue the field of their choice. During this period students will continue to advance their knowledge working on student-selected large scale projects. Students who complete T266 with a "B" or higher may be eligible for college credit when completing advanced coursework at Harper College. *Course content allows preparation for Autodesk Certification test. With successful completion of coursework, student may obtain articulated credit with Harper College (see Dual Credit Program on page 9).*



T273 Computer Repair LEVEL: 2,3,4

One year One unit

PREREQUISITE: M117 Algebra or equivalent; T174 is not a prerequisite, but is recommended.

This course is designed for students interested in computer repair. Students will have hands on experience servicing Windows-based computers. Areas of computer study include: construction, disassembly and assembly, installation and configuration of operating systems, modifying and upgrading of circuits, MS-DOS, Windows, and utilities. Students will have learning opportunities in the areas of: safety and preventative maintenance, removal and installation of field replaceable units, backing up and restoring files, configuration and utilization of video circuits, Windows, modems, I/O addresses, interrupt request lines, direct memory access, network interface cards, network connections, and the diagnosing/troubleshooting of malfunctioning systems. *Completion of this course will prepare students to earn A+ certification.*

T276 Electronics Technology 2 LEVEL: 2,3,4

One year One unit

PREREQUISITE: Successful completion of T174 Electronics Technology 1 and C or higher in M114 Algebra 1 or instructor's approval

Students will become familiar with analyzing, aligning, troubleshooting, and servicing most common types of electronic circuits. They will study areas of electronics such as amplification, solid-state circuitry, digital circuitry, FM stereo, and basic problem solving techniques. Students will build advanced projects and analyze and evaluate a variety of laboratory experiments. Emphasis is on the theory of electronic circuits and a systematic approach to troubleshooting. *Students who complete T276 with a "B" or higher may be eligible for college credit when completing advanced coursework at Harper College.*

T302 PLTW Principles of Engineering LEVEL: 2,3,4

One year One unit

PREREQUISITE: T202 Introduction to Engineering Design or Department Chair approval

PLTW Principles of Engineering is the course that follows T202 Introduction to Engineering Design in the Project Lead the Way sequence. This course uses project-based, hands-on experiences to teach students the key elements and skills of engineering and technology-based careers. Concepts in this course include communication and documentation, design processes, engineering systems, statics and strength of materials, materials and material testing in engineering, engineering for reliability, and kinematics. This course explores technology systems and manufacturing processes and addresses the social and political consequences of technological change. The applications of physics, trigonometry, and applied sciences are integrated in the course to solve engineering problems. Autodesk Inventor is a computer aided design (CAD) program that will be utilized to assist in completion of projects. With successful completion of course students may obtain college credit. *With successful completion of coursework, student may obtain college credit.*

T408 PLTW Digital Electronics LEVEL: 3,4

One year One unit

PREREQUISITE: Successful completion of T302 PLTW Principles of Engineering or Department Chair approval

This is a year-long honors course in laboratory electronics. This course covers digital electronics, starting with logic levels, truth tables, gates, flip-flops, registers, and counters. An emphasis is placed on the implementation of interfaces between analog and digital electronics, particularly when controlling and recording the results of typical engineering experiments. Students will make extensive use of the LabVIEW, Multi-Sim and other engineering software as a means of communication between a computer and external hardware. An independent project of the student's design will serve as a semester culminating activity. Digital Electronics is a foundation course for those considering careers in computer science, electric engineering, software engineering, hardware engineering, as well as other fields of engineering. *This class is a part of the PLTW Engineering sequence. T60802: Harper College Course ELT203, Digital Electronics, 4 credit hours.*

T418 PLTW Civil Engineering and Architecture LEVEL: 3,4

One year One unit

PREREQUISITE: Successful completion of T302 Principles of Engineering or the approval of the Department Chair

Civil Engineering and Architecture (CEA) is the study of the design and construction of residential and commercial building projects. This honors course includes an introduction to many of the varied factors involved in building design and construction including building components and systems, structural design, storm water management, site design, utilities and services, cost estimation, energy efficiency, and careers in the design and construction industry. The major focus of the CEA course is to expose students to the design and construction of residential and commercial building projects, design teams and teamwork, communication methods, engineering standards, and technical documentation. Students will analyze, design, and build electronic and physical models of residential and commercial facilities. While implementing these designs students will continually hone their interpersonal skills, creative abilities, and understanding of the design process. Students will use state of the art software, as used in the industry, to aid in the design process. *Course content allows preparation for Autodesk Certification test. With successful completion of coursework, student may obtain college credit.*



T336 Automotive Technology 2 LEVEL: 3,4

One year One unit

PREREQUISITE: Successful completion of T235 Auto Technology 1

Auto Technology 2 deals with testing, adjustment, repair and replacement of various components of the automobile. Students study troubleshooting and the use of test equipment including engine analyzers, computer scanners, pressure testers, and emission analyzers. They gain experience in engine mechanical diagnosis and servicing, fuel injection and emission control service, electrical testing, brake repair, alignment, transmission work, and air conditioning service. Time will be split between classroom and lab activities.

Students may bring vehicles into the lab for maintenance, testing, and repair when related to planning class activities.

Recommended but not a prerequisite for T244. ASE Certification Prep; NATEF Certified Program. T63602: Triton College Course AUT112, Intro to Auto Tech, 3 credits.

T344 Advanced Manufacturing Technology Level 2 LEVEL: 3,4

One year One unit

PREREQUISITE: Successful completion of T244 Advanced Manufacturing Technology 1

Students will work towards industry standard certifications in the area of precision machining based on the National Institute of Metalworking Skills (NIMS). Students will develop the skill set and knowledge that employers want when hiring people in the manufacturing industry. Students will have the opportunity to take NIMS credential tests in: 1) CNC Turning: Programming and Setup Operations Level 1 and 2) CNC Milling: Programming and Setup Operations Level 1. Students will be learning and operating industry standard Computerized Numerical Control machines that cut steel. NIMS operates under rigorous and highly disciplined processes as the only developer of American National Standards for the nation's metalworking industry accredited by the American National Standards Institute (ANSI). Students will also work towards industry standard certifications based on the Manufacturing Skill Standards Council (MSSC). Students will have the opportunity to take two MSSC certification exams in: 1) Safety and 2) Measurement and Continuous Improvement. *Harper College, MFT102 Intro to Manufacturing and Safety (T64301), 4 college credits; MFT104 Quality and Measurement (T64302), 2 college credits; MFT123 Intro to CNC Machining (T64302), 3 college credits.*

T346 Building Construction LEVEL: 3,4

One year Two units

PREREQUISITE: T245 Wood Technology is recommended but not required

While participating in the construction of a house, students become familiar with all stages of construction from site preparation to interior finish work. This may include the following skills: carpentry, siding, roofing, drywall, electrical, plumbing, heating, painting and staining, various flooring applications, cabinet installation, and finish trim work. Transportation to the construction site is provided. *T64602: Harper College Course MNT115, Basic Carpentry, 2 credit hours.*

T347, T447 Woodworking Technology Independent Study LEVEL: 3,4

One-half to two years One-half unit per semester

PREREQUISITE: Instructor's approval and successful completion of T245 Wood Technology

These courses will allow students who are interested in pursuing a career in the field of woodworking to gain additional knowledge and experience in an area of particular interest. With the help and supervision of the instructor, students explore in-depth such areas as cabinet making, building construction, wood technology, laminating, and bending or other related areas.

Students working on independent study projects must show personal initiative and self-direction in developing goals and carrying out plans. Research, experimentation, project construction and report writing are among appropriate student activities. With the instructor's approval, planned activities may take place outside of the classroom.

T366, T466 Architecture, Animation, & Engineering Independent Study I & II LEVEL: 3,4

One-half to two years One-half unit per semester

PREREQUISITE: Instructor's approval and successful completion of T266 Explorations in Architecture and Engineering

Students who want to further their drafting skills and gain additional experience in industrial related computer aided drafting are encouraged to enroll. Individualized work in selected areas of industrial drafting is planned with the instructor. This is an opportunity for students to become more self-directed in developing skills in an area of their choice. *Course content allows preparation for Autodesk Certification test.*

T377, T477 Electronics Independent Study LEVEL: 3,4

One-half to two years One-half unit per semester

PREREQUISITE: Instructor's approval and successful completion of T276 Electronics Technology 2

Electronics Independent Study allows students who are interested in pursuing a career in the field to gain additional knowledge and experience. With the instructor as a resource, students may explore areas such as television, industrial circuitry, digital circuitry, and circuit design in-depth. Students must possess a degree of initiative and self-direction. With the assistance of the instructor, they will develop goals and plan activities and projects which can be carried out on their own initiative. Research, experimentation, project construction, and report writing are among appropriate student activities. With the instructor's approval, planned activities may take place outside of the classroom.

Sometimes our light goes out, but is blown again into instant flames by an encounter with another human being.

- Albert Schweitzer

T428 PLTW Bioengineering & Environmental Sustainability LEVEL: 3,4

One year One unit

PREREQUISITE: Successful completion of T302 Principles of Engineering or the approval of the Department Chair

In this honors course students explore the diverse fields of biotechnology. Hands-on projects engage students in engineering design problems related to biomechanics, cardiovascular engineering, genetic engineering, tissue engineering, biomedical devices, forensics and bioethics. Students, usually at the 11th and 12th grade level, apply biological and engineering concepts to design materials and processes that directly measure, repair, improve and extend living systems. *With successful completion of coursework, student may obtain college credit.*

T438 PLTW Computer Integrated Manufacturing LEVEL: 3,4

One year One unit

PREREQUISITE: Successful completion of T302 Principles of Engineering or the approval of the Department Chair

How are things made? What processes go into creating products? Is the process for making a water bottle the same as it is for a musical instrument? How do assembly lines work? How has automation changed the face of manufacturing? While students discover the answers to these questions in this honors course, they're learning about the history of manufacturing, robotics and automation, manufacturing processes, computer modeling, manufacturing equipment, and flexible manufacturing systems.

T437 NATEF Automotive Independent Study 3 LEVEL: 4

One-half or one year One-half or one unit

PREREQUISITE: Instructor's approval and successful completion of T336 Auto Technology 2

The Township High School District 211 Automotive Technology program is certified by the National Automotive Technicians Education Foundation (NATEF). NATEF certification helps prepare students for post-secondary education, the workplace, and for Automotive Service Excellence (A.S.E.) exams. This course allows students who are interested in a career in automotive repair and maintenance to gain additional knowledge and experience in an area or areas of particular interest. Each student, with the help and supervision of the instructor, will work to complete NATEF tasks in brakes, electrical/electronic systems, engine performance, and suspension and steering. Students working on independent study projects must show personal initiative and self-direction in developing goals and carrying out plans. Students will use industry standard research software to troubleshoot and service vehicles. *ASE Certification Prep; NATEF Certified Program. With successful completion of coursework, student may obtain articulated credit with Triton College.*

T444 Advanced Manufacturing Technology 3 LEVEL: 4

One year One unit

PREREQUISITE: Successful completion of T344 Advanced Manufacturing Tech 2

Students will continue to develop skills and knowledge in the setup and operation of machines used in the manufacturing industry. Students will continue to build knowledge on programming Computer Numerical Control (CNC) machines. There will be an opportunity to use industry programming software such as Mastercam to complete projects. In an addition, a curriculum focus will be on preventive maintenance of machines. Other processes used in manufacturing will be covered including plastic injection molding, welding, casting and assembly. Course objectives will help prepare students to take industry standard certification exams available from National Institute of Metalworking Skills (NIMS) and Manufacturing Skill Standards Council (MSSC). *Harper College MFT 108 (T64401) Manufacturing Processes (3 college credit hours) and MFT 109 (T64402) Intro to Manufacturing Maintenance (2 college credit hours)*

T446 Building Construction Independent Study LEVEL: 4

One year Two units

PREREQUISITE: Instructor's approval and successful completion of T346 Building Construction

Through this course, students are given the opportunity to participate in a second building construction project, through which they can gain additional expertise in the planning and building of a house. Second-year students are given the opportunity to strengthen areas of weakness and to serve as lead carpenters in areas where they have developed confidence and expertise. *T64702 Harper College Course MNT215, Commercial Carpentry.*

T487 NATEF Automotive Independent Study 4 LEVEL: 4

One-half or one year One-half or one unit

PREREQUISITE: Instructor's approval, successful completion of T336 Auto Technology 2 and concurrently enrolled in T-437 NATEF Automotive Independent Study 3

The Township High School District 211 Automotive Technology program is certified by the National Automotive Technicians Education Foundation (NATEF). NATEF certification helps prepare students for post-secondary education, the workplace, and for Automotive Service Excellence (A.S.E.) exams. This course allows students who are interested in a career in automotive repair and maintenance to gain additional knowledge and experience in an area or areas of particular interest. Each student, with the help and supervision of the instructor, will work to complete NATEF tasks of increasing degrees of difficulty in brakes, electrical/electronic systems, engine performance, and suspension and steering. Students working on independent study projects must show personal initiative and self-direction in developing goals and carrying out plans. Students will use industry standard research software to troubleshoot and service vehicles. *ASE Certification Prep; NATEF Certified Program. With successful completion of coursework, student may obtain articulated credit with Triton College.*