



# Industrial Technology 2008-2009

	Autos	Construction/Woods	CAD	Machine Tool	Printing
Open to Freshman	Fundamentals of Technology				
	Auto Fundamentals	Woods	Intro to Computer Aided Drafting	Machine Tool	Design for Print
			Architectural Computer Aided Drafting	Advanced Machine Tool	Screen Printing Technology
			Engineering Computer Aided Drafting	CNC Machining 1	Advanced Printing & Graphic Arts
Open to Sophomores, Juniors and Seniors	Everyday Car Care	Home Repair	3-D Computer Aided Rendering & Animation	CNC Machining 2	
	Brakes, Steering & Suspension	Rough Construction			
	Automotive Engine Systems	Finish Construction			
Seniors Only	Cooperative Work Program				
	Related Cooperative Work Program				

## INDUSTRIAL TECHNOLOGY

Mr. Jeff Clarke, Chairperson  
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The Industrial Technology curriculum provides opportunities for students to learn about modern technical practices, industrial organizations, and the role of technology in our industrial society. Students are encouraged to explore several courses, specialize in a specific course area, and ultimately participate in the school/industry cooperative work program.

### FUNDAMENTALS OF TECHNOLOGY

IND100 FUNDAMENTALS OF TECH

**Elective:** Grades 9, 10, 11, 12. One half unit

**Prerequisite:** None

**Grade Weight:** College Prep

Students will have the opportunity to explore major areas of technology such as engineering, drafting, automotive, manufacturing, construction, printing and computer technology. We will be creating many projects that spread across the entire spectrum of technology. Example projects include CO2 dragsters, model rocketry, bridge construction, small engines, and CAD.

### AUTOMOTIVE FUNDAMENTALS

IND110 AUTO FUNDAMENTALS

**Elective:** Grades 9, 10, 11, 12. One half unit

**Prerequisite:** None

**Grade Weight:** College Prep

This class is designed to give the student an introductory look at the automobile and the automotive industry. Basic automotive systems and operations are discussed. Students gain hands-on experience in the lab and will begin to develop diagnosis and repair skills. Topics include safety, tools, the four-stroke cycle, fasteners, and different engine systems.

### EVERYDAY CAR CARE

IND220 EVERYDAY CAR CARE

**Elective:** Grades 10, 11, 12. One half unit

**Prerequisite:** None

**Grade Weight:** College Prep

Do you know how to change a flat tire? Jump start a car? Change wiper blades? Are you going to buy a vehicle? These topics, along with seasonal maintenance, basic automotive safety inspections, and vehicle system operations will be discussed. Students will also get hands-on experience in the lab.

### BRAKES, STEERING, AND SUSPENSION

IND230 BRAKES STEERING & SUSP

**Elective:** Grades 10, 11, 12. One half unit

**Prerequisite:** None

**Grade Weight:** College Prep

Students get an in-depth look into automotive brake, steering, and suspension systems. Theory and operation of each system are discussed, and students will gain hands-on experience in the lab. Students will be able to identify, diagnose, and repair problems found in each of the different systems.

### AUTOMOTIVE ENGINE SYSTEMS

IND240 AUTO ENGINE SYSTEMS

**Elective:** Grades 10, 11, 12. One half unit

**Prerequisite:** None

**Grade Weight:** College Prep

Students get an in-depth look into the different engine and chassis systems found on today's vehicles. The theory and operation of each system is discussed, and the student will have the opportunity to gain hands-on experience in the lab. Upon completion of the class, the student will be able to identify, diagnose, and repair problems found in each of the different systems.

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### INTRODUCTION TO COMPUTER AIDED DRAFTING

IND120 INTRO TO COMP. AIDED DRAFTING

**Elective:** Grades 9, 10, 11, 12. One half unit

**Prerequisite:** None

**Grade Weight:** College Prep

Computer aided drafting is an essential skill in all fields of engineering, architecture, and other high-technology areas. Students use powerful, up-to-date computers and AutoDesk software. Students learn the basic principles starting with the essential tools and techniques. Gradually advanced tools and techniques are introduced.

### ARCHITECTURAL COMPUTER AIDED DRAFTING

IND130 ARCHITECTURAL COMP. AIDED DRAFTING

**Elective:** Grades 9, 10, 11, 12. One half unit

**Prerequisite:** Introduction to Computer Aided Drafting

**Grade Weight:** College Prep

Students study graphical representations of technical ideas according to industry standards. Projects focus on architectural plans from residential to commercial. Students will learn about the principles, practices, and materials used in residential and light commercial construction. Students design their own house and build a scale model. AutoDesk software allows students to develop professional building plans.

### ENGINEERING COMPUTER AIDED DRAFTING

IND140 ENG COMP AIDED DRAWING

**Elective:** Grades 9, 10, 11, 12. One half unit

**Prerequisite:** Introduction to Computer Aided Drafting

**Grade Weight:** College Prep

Students will study Computer Aided Drawing as it relates to the world of engineering. Students learn advanced techniques to better organize and manage drawings, software, design dimensions, tolerances, and solid models in an industrial CAD environment. Students draw, refine, and assemble 3D solid objects. Projects will have an engineering focus with special attention to the design cycle.

### **3-D COMPUTER AIDED RENDERING AND ANIMATION**

IND150

THREE DIM COMP REN/ANIM

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**Elective:** Grades 9, 10, 11, 12. One half unit  
**Prerequisite:** Introduction to Computer Aided Drafting  
**Grade Weight:** College Prep

Students will have the opportunity to journey into the realm of three-dimensional presentation. Students use AutoDesk Viz software to create life-like, three-dimensional renderings and animated presentations of designs in an industrial or architectural setting. Projects include virtual walkthroughs and fly-bys of homes.

### **WOODS**

IND160

WOODS

**Elective:** Grades 9, 10, 11, 12. One half unit  
**Prerequisite:** None  
**Grade Weight:** College Prep

Students have the opportunity to develop skills and knowledge in the field of woodworking. Students learn safe and proper use of tools, machines, and materials commonly used in manufacturing and millwork industries. Students design and construct projects made with a variety of wood types. **This class is taught at the East Campus, but is offered to students from West Campus.**

### **HOME REPAIR**

IND270

HOME REPAIR

**Elective:** Grades 10, 11, 12. One half unit  
**Prerequisite:** None  
**Grade Weight:** College Prep

Students explore a variety of topics related to home repair through a hands-on approach. Learn safe and proper use of hand and power tools common to home repair projects. Students develop a basic understanding of household electrical systems, plumbing systems, flooring, wall framing and finishing through do-it-yourself quick fixes.

### **ROUGH CONSTRUCTION**

IND280

ROUGH CONSTRUCTION

**Elective:** Grades 10, 11, 12. One half unit  
**Prerequisite:** None  
**Grade Weight:** College Prep

Students gain experience and develop skills in the building trades while learning safe and proper use of hand and power tools common in the rough construction industry. Students participate in wall and floor framing, roofing, masonry, plumbing, electrical and exterior finish projects.

### **FINISH CONSTRUCTION**

IND290

FINISH CONSTRUCTION

**Elective:** Grades 10, 11, 12. One half unit  
**Prerequisite:** None  
**Grade Weight:** College Prep

Students gain experience and develop skills in the building trades while learning safe and proper use of hand and power tools common in the finish construction activities. Students participate in drywall, trim work, painting/staining, door and window installation, floor installation, stair construction, electrical, and plumbing projects.

### **MACHINE TOOL**

IND170

MACHINE TOOL

**Elective:** Grades 9, 10, 11, 12. One half unit  
**Prerequisite:** None  
**Grade Weight:** College Prep

Safe operation of basic metalworking machines including engine lathes, vertical mills, precision surface grinders, and band saws is stressed. Students learn to read precision measuring tools and basic mechanical prints to produce metalwork projects. **This class is taught at East Campus, but is offered to students from West Campus.**

### **ADVANCED MACHINE TOOL**

IND180

ADV MACHINE TOOL

**Elective:** Grades 9, 10, 11, 12. One half unit  
**Prerequisite:** Machine Tool  
**Grade Weight:** College Prep

This class features instruction in advanced and complex manual machine set-ups. Project plans from the TMA (Tooling & Manufacturing Association) are the main emphasis. Students are required to enter the Precision Machining Competition. **This class is taught at East Campus, but is offered to students from West Campus.**

### **CNC MACHINING I**

IND190

CNC MACHINING I

**Elective:** Grades 9, 10, 11, 12. One half unit  
**Prerequisite:** Machine Tool  
**Grade Weight:** College Prep

Students train on five Haas CNC machines. Basic G & M code programming, machine set-up, tool offsets, and operation is taught. This class along with CNC Machining II are a requirement for those planning to enter into apprenticeship training upon graduation from high school. **This class is taught at East Campus, but is offered to students from West Campus.**

### **CNC MACHINING II**

IND195

CNC MACHINING II

**Elective:** Grades 10, 11, 12. One half unit  
**Prerequisite:** Machine Tool, CNC Machining I  
**Grade Weight:** College Prep

Students prepare for entry level jobs in manufacturing. This is a pre-engineering course involving basic level math skills. Students are expected to compete in the "Skills--Illinois USA" VICA competition in CNC machining. Students focus on advanced G & M code programming and machine maintenance. Mastercam software is used in the development of difficult machining tasks. Upon Leyden graduation, students who have completed coursework in the Machine Tool Program may enter into an apprenticeship training program sponsored by the Tooling & Manufacturing Association (TMA) and the Leyden Machine tool Advisory Council businesses that support our program. **This class is taught at East Campus, but is offered to students from West Campus.**

## **DESIGN FOR PRINT**

IND105

DESIGN FOR PRINT

**Elective:** Grades 9, 10, 11, 12. **One half unit**

**Prerequisite:** None

**Grade Weight:** College Prep

Students are introduced to many career opportunities in the graphic arts and printing industries. Students learn pre-press technologies to design products such as posters and vinyl signs that can be produced through various printing methods including laser jet, desk jet, screen, and offset printing. Software includes Adobe Photoshop, Illustrator and InDesign. **This class is taught at the West Campus, but is offered to students from East Campus.**

## **SCREEN PRINTING TECHNOLOGY**

IND115

SCREEN PRINTING TECH

**Elective:** Grades 9, 10, 11, 12. **One half unit**

**Prerequisite:** Design for Print or Graphic Design

**Grade Weight:** College Prep

Students are introduced to the various aspects of screen printing technology. All phases of screen printing are explored in the lab, beginning with pre-press screen printing design and ending with production screen printing. Software includes Adobe Illustrator and InDesign; projects include design and print of mousepads, t-shirts, other cotton products, mirrors, and/or glassware. **This class is taught at the West Campus, but is offered to students from East Campus.**

## **ADVANCED PRINTING/GRAPHIC ARTS TECHNOLOGY**

IND125

ADV PRINT/GRAPHICS ARTS TECH

**Elective:** Grades 9, 10, 11, 12. **One half unit**

**Prerequisite:** Design for Print or Graphic Design

**Grade Weight:** College Prep

Students further explore the production aspect of printing and graphic arts technology. All phases of printing are covered in the lab, beginning with pre-press design and ending with production printing. The main areas of exploration include digital photography, press operation, finishing processes, and multi-media communication. Software applications include Adobe Illustrator, PhotoShop, and InDesign. Students will design and print posters, calendars, t-shirts, notepads, vinyl signs, and coffee mugs. **This class is taught at the West Campus, but is offered to students from East Campus.**

## **COOPERATIVE WORK PROGRAM**

COOP611

COOP612

CWP

**Elective:** Grade 12. **One unit**

**Prerequisite:** One credit in Business, Family and Consumer Sciences, and/or Industrial Technology

**Grade Weight:** College Prep

The Cooperative Work Program is designed to relate the high school experience to career goals. This program is a part of the total educational process that assists students as they prepare for full-time career decision-making. The classroom portion of Coop helps each student become a marketable candidate as they study work ethics, relevant interpersonal skills, and workplace knowledge. Through the Cooperative Work Program, students improve work skills and build an employment portfolio. Coop students will prepare for and take the Career Readiness Certificate exam. **Students must be enrolled concurrently in Related Cooperative Work Program.**

## **RELATED COOPERATIVE WORK PROGRAM**

RCOOP621

RCOOP622

COOP REL WRK PRG

**Elective:** Grade 12. **One unit**

**Prerequisite:** One credit in Business, Family and Consumer Sciences, and/or Industrial Technology

**Grade Weight:** College Prep

The Related Cooperative Work Program gives students options for real world experience. Students may choose from a paid part-time position, dual credit at Triton, cosmetology training at Ms. Roberts Academy, or a pharmacy tech internship. A Coop Coordinator guides students through selected programs to maximize the benefit from the experience. See page 13 for additional information. **Students must be enrolled concurrently in Cooperative Work Program.**