# Technology Studies





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# **Heat Pump** Troubleshooting 1

Grades 9-Adult 2013 28-34 min ea A Shopware Production The world of HVAC/R repair is filled with all kinds of challenges but few are as tricky as a malfunctioning heat pump. Created



and presented by Jim Johnson, a veteran HVAC/R repair specialist and instructor, this video helps develop the troubleshooting expertise needed for two common types of heat pump problems.

#### A Heat Pump That's Not **Delivering Any Air: Heat Pump Troubleshooting**

A residential package-unit heat pump has no air flow. The cause? Well, there are a few possibilities and it will take some effort to find the culprit. This video shows how to

determine whether or not the indoor air handler is the source of the problem or if it's a control component that is not allowing the blower motor to run. Trainees also learn how to replace the blower motor with an OEM component (or, with some adapting work, a general replacement motor) and to assemble the tools and test equipment needed in order to troubleshoot properly. By following along as Jim navigates each diagram, viewers are able to identify all relevant components of the unit and isolate the malfunctioning part.

#394435 DV-T14 \$109.95: DVD, web guide

A Heat Pump That Won't Cool: Heat Pump Troubleshooting

When a split system heat pump won't put out cool air, there may be several different reasons why. What will it take to find and fix the problem? By following along with Jim as he performs the necessary diagram reading, viewers are able to identify all relevant components of the unit and isolate the malfunctioning part. A major part of this diagram-reading experience is establishing that the compressor is internally protected and that the diagram shows a single pole contact. In a detailed handson demo sequence, trainees learn how to use state-of-the-art tools and test equipment, including a digital multimeter for determining microfarad rating in run capacitors. #394436DV-T14 \$109.95: DVD, web guide

# Cold Comfort: W5 **■**



Grades 9-Adult 2012 20 min CTV

CTV's Omar Sachedina investigates new homes with brand new heating systems that deliver a host of headaches instead of actual heat.

#CTV545DV-T14 \$109.95: DVD

# **Residential Construction** Framing Series

Grades 9-Adult 2013 8-13 min ea A Shopware Production Residential framing combines the construction of floors, walls, ceilings, and a roof to create the skeleton of a home. Shot on location at an active building site, this four-part series gives detailed, step-by-step instructions for framing a house, built one story at a time. Along the way students learn jobsite safety guidelines and special "Tool Tips," along with "Green Tips" for extra efficiency, savings, and sustainability.

#### **Floors: Residential Construction Framing**

Subflooring forms a large platform that covers the entire width and length of a house, providing the necessary base on which to secure the walls. This program explains how to frame the floor of a new home using the platform framing method. Along with safety, tool, and green-building tips, students learn the basics of placing and anchoring sills, butting and splicing, installing beams and joists, spacing, bridging, and laying both tongue-and-groove and square-edge subflooring.

#394412 DV-T14 \$109.95: DVD, web guide

#### **Walls: Residential Construction Framing**

Wall framing creates spaces for plumbing, electrical, and heating and cooling systems—and with the proper techniques, it can help cut energy consumption by allowing room for extra insulation. This program explains wall framing, with detailed information on chalking; cutting the stock plate; laying out the walls; cutting the lumber to size; preassembling the wall components; assembling, raising, bracing, and plumbing the walls; and nailing the cap plates. Tips on safety, tool use, and green building are provided throughout.

#394413DV-T14 \$109.95: DVD, web guide

#### **Ceiling: Residential Construction Framing**

After checking the building code for specifications, it's time to add a ceiling to newly framed walls. This program takes students through the process of creating a ceiling frame to tie the walls together and provide the underlying structure for the installation of ducts, pipes, and insulation. Along with safety, tool, and green-building tips, it explains the essentials of laying out the ceiling frame and installing joists, with details on spacing, butting, splicing, the benefits of using engineered I joists, and more.

#394414DV-T14 \$109.95: DVD, web guide

#### **Roof: Residential Construction Framing**

Roofs can be constructed in two different ways: the conventional joist and rafter method, or the more common trussed roof method that uses prefabricated units. This program covers both techniques for building a roof frame, while providing safety, tool, and green-building tips as well. Topics covered include common rafter layout (ridge, birdsmouth, and tail cuts), roof overhangs, installing the rafters, and installing the roof sheathing with notes about when to consider possible regional specifications.

#394415 DV-T14 \$109.95: DVD, web guide



# Tools of the Trade Series

Grades 9-Adult 2008 19 - 32 min each A Shopware Production

#### Tools of the Trade: Inside the Carpenter's Toolbox

How do carpenters turn building materials into buildings? To find out, this program takes a look at the tools and construction materials carpenters depend on every day. After a rundown on manufactured wood products like plywood, OSB, I-beam joists, and glu-lams as well as the fasteners that hold them all together, the video covers a variety of carpentry tools divided into four groups: planning and drawing, measuring and marking, cutting and shaping, and fastening and assembly. Types of carpenters—rough, finish, and general—are also mentioned, and safety is reinforced throughout. 19 min #010779DV-T14 \$109.95: DVD, web guide

#### Tools of the Trade: Inside the Mason's Toolbox

The eye of an artist coupled with the mind of an engineer: that's a mason. Over the course of this program, viewers will learn about commonly used masonry tools; the attributes of brick, block, tile, stone, cast concrete, and mortar mixes; fasteners, wall ties, and mortar joint reinforcements; estimating material amounts; and on-the-job safety. The building of a brick wall from footing to cap showcases a variety of tools in action, including the brick tongs, mortar hoe, chalk line, hawk, trowel, bricklayer's rule, mason's hammer, brickset, power saw, and jointer. Specialized tools for use with cast concrete, block, stone, and tile are also shown. #010780DV-T14 \$109.95: DVD, web guide

#### Tools of the Trade: Inside the Welder's Toolbox

Welding is part skill, part science, and a whole lot of precautions. This program shows viewers the safe way to work with fire, gas, and molten metal as it profiles the tools used by welders to perform a variety of tasks. Specific tools and equipment for OFW, GMAW, GTAW, and SMAW are spotlighted, along with a variety of general tools and safety items. The video also takes a look at basic welding diagrams and pre-welding treatment of materials.

#010787DV-T14 \$109.95: DVD, web guide

#### Tools of the Trade: Inside the Plumber's Toolbox

From plungers, to pipe wrenches, to Teflon tape, this program introduces each common tool of the plumbing trade with a brief demonstration of its proper use. Safety precautions and industry tips are provided as well, and four major types of piping and tubing—steel, copper, plastic, and cast iron—are described. #010775DV-T14 \$109.95: DVD, web guide

#### Tools of the Trade: Inside the Electrician's Toolbox

After a general introduction of electricity—electrons, current, kilowatts, and the journey of electrical power from utility company to home—this program examines the work materials and tools commonly used by an electrician. Wires, cables, conduits, boxes, receptacles, and switches are illustrated, and the tools required to cut and run cable or conduit, detect and test voltage, and wire or connect fixtures are shown in action. Wiring diagrams and blueprints are also considered, and safety is stressed throughout. #010788DV-T14 \$109.95: DVD, web guide

#### Tools of the Trade: Inside the Automotive Technician's Toolbox

Focusing on both conventional and hybrid vehicles, this program examines the systems that make them run and the tools that keep them running. After an introduction to the power train and the fuel, electrical, cooling, exhaust, steering, suspension, and brake systems, the video moves on to the auto tech's personal hand tools and shared shop tools. All manner of wrenches, pliers, screwdrivers, and hammers are discussed, along with high-tech diagnostic instruments and specialized equipment for repairing or replacing automotive system components. Education and training opportunities are touched upon, and safety practices are emphasized throughout.

#010789DV-T14 \$109.95: DVD, web guide



Residential Energy Efficient Projects Series

Grades 9-Adult 2014 12-20 min ea A Shopware production, in conjuntion with the National Association of Home Builders Production Unit

With rising fuel costs and a conscious focus on sustainable living, more people are turning to green building practices to transform their homes into energy-efficient, eco-friendly dwellings. Covering both new home builds and retrofits, this five-part series provides viewers with the how-tos for a variety of projects aimed at increasing energy efficiency while reducing homeowners' heating and cooling bills. The programs also offer jobsite safety guidelines, recommendations for homeowner training, and smart building tips.

#### **Conducting a Home Energy Audit**

A professional energy audit is essential to transforming an older residence into a fuel-efficient home. The procedure lets homeowners know how quickly they are consuming energy and which parts of the dwelling need improvement to keep utility costs down. This program covers the step-by-step process of performing a home energy audit and gives details about the specific techniques and tools needed for the job. From assessing the building envelope to inspecting HVAC/R systems and major appliances, then making recommendations for the most commonly-needed improvements, the video informs viewers while providing helpful tips along the way.

#394500DV-T14 \$109.95: DVD

#### **Installing a Solar Electric System**

Solar electricity is a top choice for providing clean energy, and thanks to lower prices in getting a system up and running, consumer demand for this alternative keeps rising. This program explains exactly how to install a solar electric system, with segments on determining where to place the panels or modules; proper installation of both the mechanical and electrical components; testing the system, including grounding and voltage; and what to review with the homeowner in terms of the system's operation and maintenance. The video also advises on OSHA safety regulations for rooftop and electrical work, and offers smart building tips to increase the system's efficiency.

#394501DV-T14 \$109.95: DVD

#### **Installing a Solar Hot Water System**

A solar hot water system is an eco-friendly, cost-efficient alternative to gas or electric heaters, and with a conventional heater as a backup, can provide hot water even on cold, cloudy days. After a brief overview, this program explains the process of installing an active solar hot water system. Viewers learn the specific tools, hardware, plumbing, and electrical components needed, how to test the system, and key points about its operation to discuss with the homeowner after installation is complete. The importance of setting up a safe, OSHA-compliant jobsite is also covered, and smart building tips are offered throughout. #394502DV-T14 \$109.95: DVD

#### **Upgrading a Forced Air Furnace**

Because heating and cooling utilizes the most energy in a home, one of the best decisions a homeowner can make to improve efficiency and lower bills is to upgrade these systems. This program lets viewers know how to install a new residential forced air furnace, with segments on disconnecting and removing the existing unit, inspecting and testing components, and details of the actual installation—all with an eye toward safety. Information is also given on putting in a digital thermostat, adding a humidifier and HEPA filter, and testing the entire system once it's complete. Smart tips are offered throughout, and the video closes with suggestions for homeowner training.

#394503DV-T14 \$109.95: DVD

#### Air Sealing and Insulating

Besides helping a house use less energy, properly-installed insulation means greater comfort and less noise. This program explains insulating and air sealing as part of a new home build, and also as a retrofit to an existing home. Beginning with the establishment of energy goals, the video takes viewers through the process of choosing the right kind of insulation, evaluating and accessing current insulation on a retrofit, locating and sealing leaks, and installing different types of insulation, including spray foam, fiberglass batt, and blown-in loose-fill, with safety always in mind. Verifying the installation with a blower door test and reviewing results with the homeowner is also covered, and smart building tips are provided throughout.

#394504DV-T14 \$109.95: DVD

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# **GREEN-OVATING SERIES**

#### Home Renovations for a Sustainable World

Grades 9-Adult 2010 38-42 min ea Films Media Group Spotlighting the best practices, technologies, and materials available to residential remodelers and builders, this four-part series shows how existing homes can be transformed to improve energy efficiency, eco-friendliness, livability, and sustainability while enhancing the health and well-being of their occupants. Remodeler and builder Robert Post accompanies leading designers, builders, landscape architects, and other practicing green professionals to working jobsites where they discuss and illustrate the practical application of green principles to every aspect of remodeling and renovation.

#### Home Performance: The First Step to Green

This video takes viewers through a home performance audit and shows how insights into the thermal envelope, energy footprint, and structural soundness can guide a remodeler and homeowner through the first steps toward creating a greener home. An overview of high-efficiency HVAC and geothermal technologies is also included.

#393915DV-T14 \$109.95: DVD

"This series speaks to a variety of audiences: tradespeople, laypersons, and those studying business or technology....

A valuable primer on an industry that will no doubt continue to become even more innovative in years to come. Recommended." —Educational Media Reviews Online

#### **Green Power, Clean Choices**

Whether it's solar technologies, wind, or other renewable power sources, today's remodelers need to understand the basics of green power so they can guide clients toward smarter choices and then integrate these technologies into a home. Green Power, Clean Choices provides a fundamental understanding of how these technologies work.

#393916DV-T14 \$109.95: DVD

#### Sustainable Landscaping: Growing a Greener Home

Over the course of this video, viewers will learn how a green approach to landscaping can reduce the amount of energy needed to heat and cool a house. The connection between the outdoor habitat and the home as a living space, the proper management of rainwater and runoff, the value of native plants, and the benefits of green roofs are also explored.

#393917DV-T14 \$109.95: DVD

#### Thinking Green, Building Smart

This video explores the thought process at the core of green architectural design and construction as it takes viewers behind the scenes of an architectural firm specializing in sustainable design, a green construction business, and a supplier of ecofriendly building materials.

#393918DV-T14 \$109.95: DVD



# STEM Careers in Two Years

Grades 9-Adult 2012 20 min ea Cambridge Educational

Does success in a high-tech industry require four years of college? Do jobs involving math, computers, and

scientific equipment only go to bookish, academically inclined candidates? Not at all! Many students don't realize they can reach a lucrative level of skill and knowledge in half the time it takes to earn a bachelor's degree—by following a vocational STEM career track. This four-part series shows that rewarding, well-paid jobs in several STEM industries are attainable with only two years of training. Each episode features three case studies, all focusing on employees who were hired after completing associates degrees, certifications, or apprenticeships. Glimpses of their personal lives are also shown, reinforcing that they are everyday people who ride motorcycles, play guitar, and in general defy stereotypes about STEM careers. Enriched by additional commentary from coworkers and training experts, this is a visually exciting look at career opportunities, job responsibilities, and salary parameters.

The Series Includes:

Computer and Information Technology: STEM Careers in Two Years

#394334DV-T14 \$109.95: DVD

Advanced Manufacturing and Applied Engineering Technology: STEM Careers in Two Years

#394335 DV-T14 \$109.95: DVD

Applied Science and Technology: STEM Careers in Two Years

#394336DV-T14 \$109.95: DVD

Health Care and Technology: STEM Careers in Two Years

#394337DV-T14 \$109.95: DVD

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Strategy-Based Automotive Diagnosis Series

Grades 9-Adult 2013 21-23 min ea A Shopware Production
Understanding how to repair cars is at the core of every automotive lesson
plan. But out in the real world, determining why a car that comes into the shop
has a certain problem is often the most challenging part of the repair process.
Today's automotive industry needs not just gearheads, but smart diagnostic
technicians. Each program in this series describes a seven-step diagnostic plan
that can be applied to any repair issue, teaching students the thinking skills
needed to efficiently investigate and fix them right the first time. The strategy is
put to the test, addressing several challenging automotive problems with actual
step-by-step repairs.

#### **Electrical Diagnosing: Strategy-Based Automotive Diagnosis**

Electrical problems can get complex—you will probably spend more time researching multiple resources and developing a plan than you will actually spend fixing the vehicle. Proper use of strategy can save hours of repair time. In

this program, two ASE-certified instructors determine why a truck's horn isn't functioning and troubleshoot several different power window problems on a Mustang, all using the same strategic seven-step approach that can be applied to any repair issue. #394440DV-T14 \$109.95: DVD

#### **OBD-II Code Diagnosing: Strategy-Based Automotive Diagnosis**

Today's vehicles have as many as 30 different onboard computers, and even more sensors, inputs, outputs, and codes, making a systematic diagnostic approach imperative to solving OBD-II codes quickly and efficiently. In this program, two ASE-certified instructors use a strategic seven-step approach to troubleshoot two common "check engine" light concerns, with special focus on how a step-by-step flowchart diagnosis can often point to what's causing the code to appear.
#394441DV-T14 \$109.95: DVD

#### ABS and TCS Code Diagnosing: Strategy-Based Automotive Diagnosis

Although advances in brake technology have brought increased safety and reassurance to drivers, the technology's reliance on computers and sensors makes diagnosis of braking system problems more complex. In this program, two ASE-certified instructors diagnose trouble codes associated with antilock braking systems and traction control systems using a strategic seven-step plan that can be applied to any repair issue. Special attention is given to how systematic circuit testing and use of flowcharts can often get to the root of these problems.

#394442DV-T14 \$109.95: DVD



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#### 2012 Bellwether Award Finalist

# **Engine Performance ASE Certification Series**

Grades 9-Adult 2012 25-35 min each A Shopware Production With this three-part series on engine performance and repair, technicians-in-training develop the aptitude they'll need to succeed on the ASE A8 test while building hands-on skills that will enable them to diagnose and solve a range of engine problems. Videos are broken down into self-contained segments, each of which focus on specific areas of ASE-related proficiency, and presented by two highenergy, ASE-certified instructors who make parts identification and maintenance lessons easy to follow. Demonstrations are performed in a full-service shop on a range of automobiles, while no-fluff graphics, on-screen quizzes, and plenty of upbeat reminders about professional integrity round out this must-have instructional resource.

#### Engine Diagnosis, Intake and Exhaust, and Emissions

A great auto technician isn't just a "gear head." He or she needs keen analytical thinking skills to diagnose engine problems. This video guides car techs at all instructional levels in strategic engine diagnosis and the components of a car's intake system, exhaust system, and emissions controls. Viewers are shown testing procedures for power balance, compression, cylinder leakage, oil pressure, and other engine checks; a clear explanation of volumetric efficiency; the mechanics of turbo-chargers and super-chargers; how to interpret the results of a five-gas analysis in real time; how to check the EGR valve in an EVAP system; and much more. #394281DV-T14 \$109.95: DVD, web guide

#### Ignition Distributors, Distributorless Ignition Systems, and Fuel Systems

A car's ignition gives it the spark of life—but, as any good technician knows, figuring out how ignition and fuel systems really work isn't that simple. This video sheds light on the daunting maintenance challenges found in ignition distributors, distributorless ignition systems, and fuel systems. Viewers learn about diagnosing problems with several components—including distributors, distributor caps, distributor rotors, spark plugs, and spark plug wires—and how to build an ignition system. The next section covers the computers, triggering devices, coil packs, modules, and other elements of a distributorless ignition system, while the subsequent chapter looks at fuel pumps, fuel injectors, fuel filters, fuel pressure tests, injector testing, and more.

#394282DV-T14 \$109.95: DVD, web guide

#### **Computer Systems, Computer System Sensors**

To understand whether or not a vehicle is functioning properly and determine its potential problems, a service provider now has to understand computers. This video offers guidance in the complex workings of a car's nerve center and the sensors that bring information, from mass air flow to engine coolant temperature, into an automotive computer system. Viewers can sharpen their skills and knowledge in interpreting real-time scan tool readings for cars that often boast over 50 microprocessors. Examples of modules that technicians frequently deal with are shown as the video discusses OBD II procedures and a variety of sensors, such as those for throttle position, heated oxygen, manifold absolute pressure, intake air temperature, and more. #394283DV-T14 \$109.95: DVD, web guide

# Buy 4, Get 1 FREE DVD!



Grades 9-Adult 2012 22-33 min each A Shopware Production

When it comes to automotive professionalism and a concern for customer safety, nothing is more important than high-quality brake repair work. Use this three-part series to give auto-shop students and service trainees their best shot at acing the ASE A5 test, along with real-world capabilities in diagnosing and solving a variety of braking system problems. Episodes are divided into self-contained chapters, each of which pin-points certain areas of ASE-related competence, and led by two authoritative, ASE-certified instructors who make it easy to identify parts and internalize maintenance lessons. Demonstrations are carried out in a fully equipped shop on a range of vehicles, while concise quizzes, helpful graphics, and friendly coaxing on the need for professional integrity add extra shine to this vital teaching toolkit.

#### Brake Fundamentals, ABS, and Flaring

The laws of physics are central to brake technology, but you've got to put theory into practice when servicing a braking system. This video helps automotive students and trainees build a solid knowledge base in brake diagnosis and repair, from the wonders of ABS technology's three modes of operation to the nitty-gritty of flaring a brake line. Illustrating the basic roles of the master cylinder and the brake booster, the video looks at antilock systems, traction control, and the basics of inputs and outputs. Scan tool testing is also illustrated. Then, viewers learn the proper way to bend, cut, flare, and install a brake line, including both double flare and ISO or bubble flare techniques, as well as how to troubleshoot brake hose problems.

#394304DV-T14 \$109.95: DVD, web guide

## Master Cylinders, Valves and Bleeding, and Power Assist

The ins and outs of brake system maintenance require skilled hands, a sharp eye, and a focused mind. This video serves as a guide to performing work on master cylinders, valves, and power assist components. Dissecting the master cylinder in order to look at its hydraulic components, compensating port, vent port, step bore cylinder, and other parts, the video also examines metering valves, combination valves, proportion valves, and their functions, while discussing pedal force, mechanical advantage, hydraulic advantage, vacuum suspended boosters, atmospheric suspended boosters, tandem boosters, single diaphragm boosters, check valves, and more. All four modes of bleeding are

#394305DV-T14 \$109.95: DVD, web guide

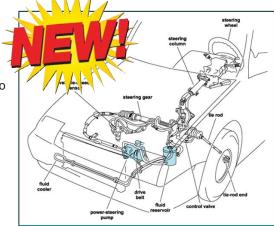
#### **Disc and Drum Brakes**

Although a car technician needs to become familiar with both disc and drum brakes, each brake type has its own service-related quirks and challenges. This video features both disc and drum instruction for automotive students and service trainees. The disc brake section shows viewers different types of disc pads, rotors, and calipers; how to cut rotors using either a standard or on-car brake lathe: how to visually inspect the lines; how to disassemble the front disc and remove the rotor; and how to reassemble in a professional manner. The drum brake section covers drum shoes, springs, hold-downs, wheel cylinders, and other parts, with insight on cutting drums, disassembly, and reassembly. Staying alert for problems during a test-drive is also emphasized. #394306DV-T14 \$109.95: DVD, web guide

# Power Steering Systems: Service and Diagnosis

Grades 9-Adult 2014 17 min A Shopware Production

Combining theory with hands-on demonstrations, this program explains the operation of power steering systems, then provides step-by-step instructions on the inspection, diagnosis, and servicing of their various components. Diagnostic scenarios on power steering pumps, rack and pinions, and steering gearboxes are explored with the help of two ASE-certified instructors, who also take viewers through the removal and installation of these parts. In addition, a power steering engineer gives his expert advice on common power steering failures, how often to change steering fluid, and the best type of fluid to use. #394505DV-T14 \$109.95: DVD, web guide





Grades 9-Adult 2012 19-25 min each A Shopware Production From cutting-edge component design to fine-tuned methods of service and repair, this seven-part series takes viewers through the ins and outs of automotive powertrain technology. Each video covers a specific component or set of components, using detailed cutaways and stylish animated diagrams to demonstrate working parts and how they're serviced. Whether the topic is pistons or planetary gear sets, drive axles or differential disassembly, students are sure to come away with a vast new automotive vocabulary and a greatly enhanced understanding of professional car and truck repair.

#### **Hybrid Powertrain Technology**

With all major car manufacturers now producing hybrid gaselectric vehicles, it is critically important that automotive students understand the design and function of hybrid technology and the differences between various hybrid systems. This video helps develop that understanding through the use of dynamic 3-D animation and detailed live-action visuals. #394362DV-T14 \$109.95: DVD, web guide

#### **Automatic Transmission Technology**

This video provides an in-depth technological grounding that will enable students to troubleshoot and repair systems which make up today's automatic transmissions.

#394363DV-T14 \$109.95: DVD, web guide

#### **Manual Transmission Technology**

This video illustrates the engineering and operating principles of helical gear manual transmissions with help from high-energy graphics, animation, and live-action footage. #394364DV-T14 \$109.95: DVD, web guide

#### **Clutch Operation and Service**

Demonstrating a wide range of standard shop techniques as well as a few handy tricks of the trade, this video introduces viewers to the operation and service of typical automotive and light truck-type clutches.

#394365DV-T14 \$109.95: DVD, web guide

#### CV Axle Technology

Almost all new cars come equipped with constant velocity or CV drive axles, and CV joints are needed in front-wheel-drive vehicles to avoid driveline vibration. Likewise, cars with frontwheel drive or independent rear suspension use CV axle shafts for maximum flexibility. Since millions of today's cars now utilize this technology, understanding the makeup and function of CV axles is crucial to mastering this high-demand area of auto repair

#394366DV-T14 \$109.95: DVD, web guide

#### **Differential Technology**

As any automotive trainee soon learns, a car's differential must provide torque to propel the vehicle, even when the wheels and axles are turning at different speeds. Various differential designs are used to accomplish this and other functions in rear-wheel drive, front-wheel drive, and all-wheel drive vehicles. This video guides students through various differential and drive designs and summarizes how each one operates.

#394367DV-T14 \$109.95: DVD, web guide

#### **Differential Service**

Since the differential must transfer engine power to both drive axles, it is exposed to high stress loads. After prolonged driver use (or abuse), gears, bearings, shafts, and other parts can fail. Therefore, well-trained technicians are needed to service the front and rear differentials found in today's vehicles. This video shows how to diagnose common differential and drive axle problems and perform essential services and repair operations. #394368DV-T14 \$109.95: DVD, web guide

#### **Basic Car Care**

Grades 9-Adult 2008 24 min Films Media Group

This is an excellent program for anyone owning and operating a motor vehicle. It brings a basic owner's manual "to life" and summarizes the tasks that can and should be done without the use of specialized tools. The program covers checking and adding fluids, inspecting for obvious problems with belts and hoses, changing a flat tire, using jumper cables on a dead battery, paint touch-up and care, body lubrication, lightbulb replacement, and much more.

#010786DV-T14 \$109.95: DVD

#### **How Your Car Works**

Grades 9-Adult 2008 17 min Films Media Group

It's the ultimate challenge for every basic automotive instructor: how to teach students who know almost nothing about car technology. This video is designed for viewers who might have only a vague understanding of an automobile's inner workings, helping them to become more technically informed about vehicle parts, systems, and operation. Contains material on hybrid cars and systems. #010785DV-T14 \$109.95: DVD

# **Automotive Computer Systems**

Grades 9-Adult 2008 19-26 min ea A Shopware Production

This series provides a basic working knowledge of automotive computer systems and the ins and outs of OBD-II diagnostics. Students will absorb lessons in computer system operation, trouble codes, scan tools, and repair procedures, while hybrid engine technology is also addressed.

Viewable/printable instructor's guide are available online.

**Automotive Computer System Operation** 

Shows students how to analyze scan-tool data retrieved from OBD II vehicles. #700636DV-T14 \$109.95: DVD

Computer On-Board Diagnostics

This video explains the general operation and many of the fine points of on-board diagnostic systems. Illustrates the different systems within a car—brakes, electrical, steering, etc.—that an OBD-II system monitors and troubleshoots.

#700637DV-T14 \$109.95: DVD

**Automotive Computer System Service** 

This program shows students how to use a scan-tool to diagnose car system problems, covering the following specific topics: pinpoint tests; active sensor service for oxygen, magnetic, knock, and light or solar sensors; passive sensor service for temperature, throttle position, pressure, and flow sensors; sensor replacement; actuator service; and computer service.

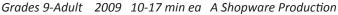
#700638DV-T14 \$109.95: DVD

**Scanning Automotive Computer Problems** 

The program illustrates a typical scan tool interface and its digitally displayed options, as well as the many types of codes—including hard, soft, and manufacturer—it produces.

#700639DV-T14 \$109.95: DVD

# **Electrical Systems Series**



This seven-part series uses cutaways, animated component builds, diagrams, close-ups of parts, and footage of auto techs doing tests and making repairs to illustrate the operation and servicing of automotive electrical systems. Includes information on both late-model and older-style vehicles.

#### **Charging System Operation**

This video provides an overview of the charging system, with its battery, alternator, voltage regulator, and starter solenoid. #393649 DV-T14 \$109.95: DVD

#### **Charging System Service**

An automotive technician shows how to diagnose charging system malfunctions #393650DV-T14 \$109.95: DVD

#### **Ignition System Operation**

Focuses on five components: spark plugs, secondary wires, ignition coils, distributors, and electronic control units. Distributorless ignition systems are discussed as well. #393651DV-T14 \$109.95: DVD

#### **Ignition System Service**

In this video, an automotive technician demonstrates how to inspect, maintain, and replace secondary wires, spark plugs, distributors, ignition coils, electronic control units, and power train control modules.

#393652DV-T14 \$109.95

#### **Starting System Operation**

This video explains the functions of the starting system and the construction of its components in detail: the battery, starter motor, starter drive, solenoid, in-dash or in-column ignition switch, and neutral safety switch or clutch switch. #393653DV-T14 \$109.95: DVD

#### **Starting System Service**

In this video, an automotive technician troubleshoots the most common problems involving the starting system. #393654DV-T14 \$109.95

#### **Using a Load Tester**

This video explains how to use a load tester to analyze the state of the battery, starting system, and charging system. #393655DV-T14 \$109.95



Grades 9-Adult 2011 21-23 min each A Shopware Production Working in the crafts and the trades is a rewarding way for people to get their hands into their work—but it can be dangerous, too. This five-part series shows how to play it safe when working with technology used in various professions. Protect your students by making these videos compulsory viewing!

"...these DVDs provide teachers with the step-by-step guidelines for student safety while meeting specific instructional objectives....Educators required to provide safety instruction for vocational/technology education programs will find that this series addresses the specific objectives in the safe use of dangerous equipment while providing additional resources to enhance the curriculum content."

—Library Media Connection

#### **Electrical Safety**

Those who work with electricity continually run the risk of electric shock and electrical fires. This video details electricityrelated safety procedures to follow for these hazards as well as protection of electrical instruments and solid-state devices. An excellent overview for those who work with electricity and a useful general safety video for anyone else studying technology. #393942DV-T14 \$109.95: DVD

#### **Welding Safety**

This video covers the most important safety rules and protective equipment to use when performing MIG, TIG, arc, and gas welding. Welding helmets and their lens ratings, leather aprons and gloves, welding gas respirators, heat shields, and fire extinguishers are discussed, and various types of welders, including plasma cutters, are illustrated. #393943DV-T14 \$109.95: DVD

#### **Woodworking Safety**

Woodworking can be a fun and very rewarding hobby or profession. However, the technology behind it can be dangerous without proper training and attention. This video summarizes the most critical safety measures to observe when using table saws, radial arm saws, planers, routers, lathes, joiners, large belt sanders, and other woodworking technology. The bottom line? Woodworking tools and equipment are very powerful machines that must be understood and respected. #393944DV-T14 \$109.95: DVD

#### **General Shop Safety**

This video demonstrates the types of dangers present in any industrial or manufacturing atmosphere and then explains how to prevent accidents. Actual industrial accidents (cranes collapsing, foundry explosions) are used to stress the importance of using proper methods when in a general shop. An excellent program for technology/vocational courses. #393945DV-T14 \$109.95: DVD

#### **Metalworking Safety**

Metalworking is a broad field of study that encompasses several large industries. This informative video demonstrates the kind of precautions that should be taken when working with metals. Sheet metal work, soldering, foundry work, and forging are covered, along with handling steel beams at a construction site. Footage of fatal accidents and testimonials from steelworkers reinforce the importance of safety. This video should be viewed by anyone studying technology or any metal-working trade. #393946DV-T14 \$109.95: DVD

#### **Auto Shop Safety**

Grades 9-Adult 2008 21 min A Shopware Production Reinforcing concepts with helpful animation, this video provides crucial knowledge about accidents that can occur in automotive repair shops. The best ways to prevent them, and the smartest and safest steps to take when they happen, are explained. The video covers all major shop areas, including the stall, grease rack, front end rack, tool room, and classroom. Running engines, open fuel lines, welding tools, moving cars, cars on lifts or jacks, and other shop hazards are illustrated, with detailed information on avoiding fires, explosions, asphyxiation, chemical burns, electric shock, and impact injuries. Hybrid vehicle technology is also explored.

#010828DV-T14 \$109.95: DVD

#### What Lies Beneath: W5

Grades 9-Adult 2013 10 min CTV



W5 takes viewers underground with a look at sewer pipes and the growing problem of gas lines punched through them. It's called a cross-bore, out-of-sight and out-of-mind, unless someone makes the potentially explosive mistake of cutting through it. W5 speaks to Trista Meehan, a Minnesota woman who lost her home when it blew up after a plumber tried to clear the main sewer line. Canada's gas companies have remarked that cross-bore awareness must become part of the DNA of anyone rooting around anywhere near a gas pipeline.

#CTV585DV-T14 \$109.95: DVD

# Welding Processes and Fundamentals Series



Grades 9-Adult 2012 23-28 min each A Shopware Production

Whether the industry is car-making, airplane manufacturing, or even rocket science, few things are more important than a quality weld. This four-part series combines engaging videography, no-nonsense explanations, and eye-catching graphics as it introduces viewers to the most common welding processes.

#### Shielded Metal Arc Welding (SMAW)

Often referred to as "stick welding," SMAW has been used for decades to weld most metals and alloys. This video helps students learn the basics of the SMAW method, in which the electrode is consumable and becomes part of the weld. Identifying critical system components, the video explains different power types and power levels and includes a discussion of DCRP, DCSP, and AC modes. It then shows how to choose the correct welding rod, make sure that all equipment and working conditions meet professional safety standards, set up the system to begin work, correctly lay a bead, and read or inspect a bead. A segment on advanced techniques looks at several types of joints—edge, corner, lap, and tee joints as well as various butt joints—in addition to root, fill, and cap passes. Solving the problem of arc blow is also covered.

#394308DV-T14 \$109.95: DVD, web guide

#### Gas Tungsten Arc Welding (GTAW)

This video shows students how to properly and safely apply GTAW techniques. Pointing out tungsten's high melting temperature (the highest of any metal) and the general advantages of GTAW, the video explains AC or DC power source options as well as other system components, including the torch, foot switch, shielding gas, and ground clamp. Viewers learn how to select and prepare the right electrode (an AWS chart is illustrated), how to ensure safe working conditions, and how to set up the GTAW system for quality welds. An advanced segment covers joint types from butt to tee and helps troubleshoot problems like excessive tungsten wear, tungsten spitting, a porous weld, and an unstable arc.

#394309DV-T14 \$109.95: DVD, web guide

#### Gas Metal Arc Welding (GMAW)

Also referred to as "MIG" (metal inert gas) welding, GMAW creates an arc with a solid wire fed through a MIG gun and melted to form a weld. This video guides students through the basics of gas metal arc welding, which is often used in automotive, structural, and production manufacturing. Helping students identify the correct duty cycle for the job at hand, the video explains the function and specifications of the electrode or "filler wire" as well as the other GMAW tool components. Safety, transfer modes, general set-up procedures, laying and reading beads, and other topics are featured. A troubleshooting segment helps deal with problems like an erratic puddle, excessive spatter, porosity, poor penetration, and excessive penetration, with advanced GMAW techniques also explored.

#394310DV-T14 \$109.95: DVD, web guide

#### Oxy-fuel and Plasma Cutting

This video serves as a basic guide to two popular heat-based cutting methods: oxy-fuel and plasma. Beginning with an overview of safety procedures, the video shows how to set up an oxy-acetylene system and demonstrates correct coupling distance, travel speed, torch angle, machine finishing, and other aspects of handheld cutting. Additional fuel choices are listed, too. The plasma segment includes a basic definition of what plasma is and how it is able to cut. Viewers learn the fine points of setting up and cutting with a plasma system and are given numerous tips and guidelines, from one- and two-hand torch manipulation to troubleshooting various problems.

#394311DV-T14 \$109.95: DVD, web guide



# **Creating Mobile Apps Series**

Grades 9-Adult 2012 22 min ea Films Media Group
With the app market in boom mode, entrepreneurs across North
America and around the world have poured their energy and resources
into app development. What does it take to stake a claim in this hightech gold rush? What tools and techniques are most likely to produce a
winner? This two-part series answers those questions, going inside the
world of app creation—from the eureka moment that inspires a new
project through various stages of content and interface development to
the final phases of deploying and promoting the app. Weighing platform
options, ensuring ease of navigation, and integrating social media are
all important topics of discussion, and both episodes feature detailed
interviews with experts who specialize in app development.

#### Mobile App Research and Planning

The process of bringing a successful app to market begins long before the actual software is developed. As with any endeavour that fuses commerce and creativity, the app usually starts with a spark of inspiration and gets fleshed out through market research and intensive planning. This program takes viewers through those initial phases with hip, high-energy visuals and commentary from experts who create apps for a living. Topics include identifying the target audience or consumer base; studying apps aimed at a similar market; creating a project plan; designing with a focus on ease of use and the customer's ability to share with other users; strategizing to compete against more corporate, big-budget apps; considering various development tools to utilize; thinking ahead regarding platform options; looking at monetization models; distinguishing between apps that deliver a lot of content and those that use little or none; using content management systems; and projecting costs and profitability.

#394352DV-T14 \$109.95

#### **Mobile App Development and Deployment**

Once the purpose, basic architecture, and potential consumer base of a mobile app have been established, it's time to get busy building it. But app development is typically a complex undertaking and subject to a wide range of variables. This program helps viewers sift through the process of successful app construction with the aid of expert interviews and eye-catching video and graphics. Topics include choosing a platform (mainly Apple vs. Android); designing the user interface with an eye toward simplicity and functionality; using wireframes to storyboard the app's navigation tree; balancing a tab bar approach with screen size concerns; integrating social media; developing visual, audio, and narrative content; designing data structures; using server-side technology; testing algorithm design; load testing and beta testing; conforming the app to platform specifications; promoting it through search engine optimization, social media, and viral marketing; and maintaining the app with ongoing product analysis.

#394353DV-T14 \$109.95: DVD

# Buy 4, Get 1 FREE DVD!



Grades 9-Adult 2014 25-30 min ea Films Media Group

Digital technology has transformed the way companies use traditional media such as TV, radio, and print while simultaneously introducing Web sites, social media platforms, and mobile apps to the marketing mix. This timely two-part series will show viewers how to put online and mobile media to work expanding and enhancing customer/company relationships as consumers continue to seek out products and services whenever they want them and wherever they are.

#### **Social Media for Business Marketing**

The use of social media to promote business is one of the fastest-growing areas of marketing today. When used correctly, popular social media platforms offer the ability to connect—easily, affordably, and directly—with customers and prospects to build brand awareness and loyalty, improve customer service, and much more. How, then, should a company go about implementing social media as a part of its marketing mix? This program clearly and concisely explains how to get started with social media; make the most of Facebook, Twitter, LinkedIn, Pinterest, Instagram, and Yelp; and develop and manage a comprehensive social media marketing strategy. #394506DV-T14 \$109.95: DVD

#### **Online and Mobile Business Marketing**

There was a time when companies debated whether having a Web site would be useful in an overall marketing strategy. Today, a business Web site paired with a mobile app and supported by a nuanced online marketing strategy is a necessity in order to serve an increasingly technosavvy customer base. This program gives a detailed overview of how companies can create and maximize an online/mobile presence starting with the basics—goal-setting, search engine optimization, the user experience, and traffic analysis—and finishing with more advanced promotional considerations such as Web site tie-ins (e-newsletters, blogs, social media); mobile apps; online/mobile/offline advertising (Google Ad Words, Facebook Mobile Ads, QR codes); and text message marketing. #394507DV-T14 \$109.95: DVD

# So You Want to Be a Designer?

## A How-To Guide to Product Design

Grades 9-Adult 2011 25 min each Films Media Group

As consumer attitudes change so too does the demand for high quality, well-designed, environmentally sustainable goods. And in turn, the call for new kinds of products creates endless opportunities for designers all around the globe. This 8-part series explores the challenges facing product designers, covering a range of subjects including user design, mass manufacture, testing and modification, and the use of sustainable materials both for packaging and for products. The series features case studies, explains relevant terminology, and provides an in-depth look at manufacturing processes.

#### **Designing for the User**

In this program viewers learn how observation, research data, and a feedback development cycle are brought into play to ensure that products meet the needs of the people using them.

#394164DV-T14 \$109.95: DVD

#### **Designing with Recycled Materials**

This program profiles two companies who have successfully created products from recycled goods.

#394165DV-T14 \$109.95: DVD

#### **Life Cycle Assessment**

Volvo's ReCharge hybrid car has an electric motor in each of its wheels, helping to reduce the amount of carbon dioxide created when being driven. But a car's performance on the road is only one part of its overall green rating. With the ReCharge serving as an example, this program shows how Life Cycle Assessment is employed to evaluate the environmental impact of manufactured goods. #394166DV-T14 \$109.95: DVD

#### **Product Design and Mass Manufacture - Design Optimization**

In this program, designers from Britain's Kinneir Dufort employ market research and model-making technology to redesign a peak flow meter, used by people with asthma to measure lung function.

#394167DV-T14 \$109.95: DVD

#### **Sustainable Packaging**

As consumer attitudes change so too does the demand for high quality, well-designed, environmentally sustainable goods. And in turn, the call for new kinds of products creates endless opportunities for designers all around the globe. #394168DV-T14 \$109.95: DVD

#### **Choosing Sustainable Materials**

This program profiles CO2 Zero, an eco-friendly housing development in the UK, focusing on its use of recycled plastics and FSC-certified wood. #394169DV-T14 \$109.95: DVD

#### **Designing for Innovation and Safety**

In this program Volvo representatives address the issue of combining safety features with good design while maintaining brand identity. #394170DV-T14 \$109.95: DVD

#### **Product Design, Testing, and Modification**

This program explains how a product became a worldwide success through following three important principles of good merchandise design. #394171DV-T14 \$109.95: DVD





Using case studies, first-rate technical expertise, and high-energy video, this six-part series helps develop hands-on knowledge and conceptual understanding in a variety of electronics fields. Viewers will learn about cutting-edge applications in health care, communications, manufacturing, automotive design, and environmental studies, while an additional episode highlights the design and construction of printed circuit boards.

Health Care Applications: Electronics in Medical Imaging

#394173DV-T14 \$109.95: DVD

**Communications: Wireless and Fiber Optics** 

#394174DV-T14 \$109.95: DVD

**Industry Applications: Two Electronics Case Studies** 

#394175DV-T14 \$109.95: DVD **Transport: The Electronic Future** #394176DV-T14 \$109.95: DVD

**Environmental Applications: Electronics and Climate Studies** 

#394177DV-T14 \$109.95: DVD

Printed Circuit Boards: Uses, Design, and Manufacture

#394178DV-T14 \$109.95: DVD

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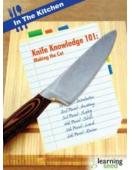
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# In the Kitchen Series

Grades 9-Adult 2010 CC 19-26 min ea Learning Seed

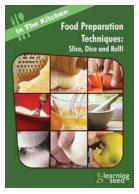
Featuring demonstrations and guidance from Chef Chris Koetke, Dean of Culinary Arts at Kendall College and star of ABC's "Let's Dish." Six new and fully revised programs exploring kitchen math and measuring, cooking techniques, microwaves, kitchen utensils, and knife skills.



## Knife Knowledge 101: Making the Cut

Spend a school day with professional chef Christopher Koetke as he describes the parts of a knife from tip to tang, different types of knives, the proper way to handle and care for them, and the jobs they do best. Learn basic knife techniques like chopping, cubing, dicing and more, as well as some handy tips to help cut more difficult food like an avocado and a pineapple. By the end

you'll be sharp enough to make the cut! #200240DV-T14 \$109.95: DVD, web guide



## Food Prep Techniques: Slice, Dice and Roll!

Learn techniques to grate, peel, scoop and shred to help prepare different foods. Realize how different methods of mixing food involve strength while others require finesse. See how to prepare meat and vegetables for a variety of cooking methods by basting, breading, brushing, dredging and marinating them.

#200244DV-T14 \$109.95: DVD, web guide



## Kitchen Tools and Utensils: Everything But the Kitchen Sink

Spatula, spoon, whisk, rolling pin - there are so many utensils in the kitchen! These utensils are what make cooking and baking possible. But with so many options, how do you know which cup or spoon is right for the job? Or what the difference is between a masher and a ricer? Watch as a professional chef demonstrates how to use common kitchen tools that scoop,

stir, cut, and smash, as well as other miscellaneous utensils like tongs, strainers, brushes, and thermometers. #200241DV-T14 \$109.95: DVD, web guide



## Microwave Mysteries: Beep, Zap, Defrost!

Most people know what a microwave is, but do we really know what goes on in there? It's kind of a mystery, isn't it? Trace the workings of a microwave from the wall socket to the magnetron tube to a warm meal. See how excited molecules create heat that cooks food, and discover why some foods explode while others don't. And what about aluminum foil —

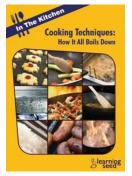
can it go in the microwave? Are microwaves really safe to use? Understand the answers to these questions as well as how to use power levels and other common microwave features. #200242DV-T14 \$109.95: DVD, web guide



## Kitchen Math and Measuring: How It All Adds Up

Explore the world of math and measuring from the perspective of a chef. Step inside the kitchen to learn different tools for measuring liquid and dry ingredients, how and why we measure heat, and equivalent measures for US and Metric systems. Using cookies as our inspiration we'll show you how to halve, divide, and multiply a basic recipe.

#200243DV-T14 \$109.95: DVD, web guide



#### Cooking Techniques: How It All Boils Down

Looking to cook something new, but unsure where to start? Observe as a professional chef and his students work step-by-step to demonstrate 13 common cooking techniques using dryheat methods like baking, broiling and roasting, and moist-heat methods like blanching, boiling and steaming. Discover that delicious homemade meals aren't

that complicated, and are much more rewarding than ordering takeout!

#200245DV-T14 \$109.95: DVD, web guide



# **Beneficial Insects in Agriculture**

Grades 9-Adult 2013 18 min Motion Picture Enterprises Inc.
This new Canadian production examines how insects are employed in agriculture for pest control and food production. Case studies include the innovative use of predatory insects to protect greenhouse food crops and bumble bees to deliver a beneficial spore to prevent grey mold on berries and the traditional use of honeybees in pollination and honey production.

Delivered in 3 short modules:

Module One: Pest Insect Control Module Two: Fungi Control

Module Three: Honey Bees: Pollinators and Producers

#MPE000DV-T14 \$109.95: DVD, PDF guide





# The Science of Propagation Series

Grades 9-Adult 2005-2010 21-35 min ea San Luis Video Publishing

This popular series of nine videos has been a staple in classrooms. Now you can add a new and important propagation techniques to the three propagation methods previously covered: seeds, cuttings, and vegetative techniques. Imagine the convenience as our cameras take your students into locations where they see wholesale nursery operations cranking out millions of plants through commercial propagation techniques. You can't afford to take you classes to all of these types of operations, but you can show them how it all works through the convenience and economy of these programs.

Volume 1: Seeds	#SLP022DV-T14	\$109.95: DVD
Volume 2: Cuttings	#SLP023DV-T14	\$109.95: DVD
Volume 3: Vegetative Techniques	#SLP024DV-T14	\$109.95: DVD
Volume 4: Tubers & Tuberous Roots	#SLP044DV-T14	\$109.95: DVD
Volume 5: Hybridization	#SLP047DV-T14	\$109.95: DVD
Volume 6: Grafting Vegetables Approach		
& Cleft Grafting	#SLP048DV-T14	\$109.95: DVD
<b>Volume 7: World Food Crops - Grains and Legumes</b>	#SLP049DV-T14	\$109.95: DVD
Volume 8: World Food Crops - Tropicals	#SLP050DV-T14	\$109.95: DVD
Volume 9: World Food Crops - Roots	#SLP051DV-T14	\$109.95: DVD

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www.mcintyre.ca





Biotechnology is revolutionizing life in the 21st century, but with every breakthrough comes controversy. Do the benefits of stem cell technology, gene-splicing, and other advances outweigh the risks? Using interviews with experts, footage of scientists at work, 3-D animations, and on-screen text, this balanced four-part series introduces viewers to a field of science—and the pressing issues associated with it—that is rapidly changing the world.

Bioinformatics, Genomics, and Proteomics: Getting the Big Picture
Moving from gene, to genome, to genetically based diseases, this program
provides an overview of the interrelated fields of genomics, proteomics,
and bioinformatics, with an emphasis on practical applications of
biotechnology to the field of medicine.
#393578DV-T14 \$109.95: DVD

#### **Biotechnology and Your Health: Pharmaceutical Applications**

This program explains the function of infection-fighting antibiotics; vaccinations and insulin, crucial to the prevention of diseases such as smallpox and the management of diabetes; recombinant drugs, treatments involving genetically engineered DNA; and stem cells, those chameleon-like building blocks of the body.
#393579DV-T14 \$109.95: DVD

#### Biotechnology on the Farm and in the Factory: Agricultural and Industrial Applications

This program examines how biotechnology is helping to meet those needs through genetic engineering to increase crop yields and improve the nutritional value of key staple foods; animal agriculture, founded on selective breeding and edging toward lab-based genetic engineering; and industrial applications of biotech in the manufacturing of chemicals, textiles, beverages, and fuel. #393580DV-T14 \$109.95: DVD

#### The Ethics of Biotechnology

This program confronts viewers with some of the ethical and moral implications of cloning, stem cell research, and animal testing. #393581DV-T14 \$109.95: DVD

# Buy 4, Get 1 FREE DVD!



# Residential Construction Framing Series

Grades 9-Adult 2013 8-13 min ea A Shopware Production Residential framing combines the construction of floors, walls, ceilings, and a roof to create the skeleton of a home. Shot on location at an active building site, this four-part series gives detailed, step-by-step instructions for framing a house, built one story at a time. Along the way students learn OSHA-approved jobsite safety guidelines and special "Tool Tips," along with "Green Tips" for extra efficiency, savings, and sustainability. See page 3.

# Strategy-Based Automotive Diagnosis Series

Grades 9-Adult 2013 21-23 min ea A Shopware Production
Understanding how to repair cars is at the core of every automotive lesson plan. But out in the real world, determining why a car that comes into the shop has a certain problem is often the most challenging part of the repair process. Today's automotive industry needs not just gearheads, but smart diagnostic technicians. Each program in this series describes a seven-step diagnostic plan that can be applied to any repair issue, teaching students the thinking skills needed to efficiently investigate and fix them right the first time. The strategy is put to the test, addressing several challenging automotive problems with actual step-by-step repairs. See page 7.





# **Heat Pump Troubleshooting Series**

Grades 9-Adult 2013 28-34 min ea A Shopware Production

The world of HVAC/R repair is filled with all kinds of challenges but few are as tricky as a malfunctioning heat pump. Created and presented by Jim Johnson, a veteran HVAC/R repair specialist and instructor, this video helps develop the troubleshooting expertise needed for two common types of heat pump problems. Viewable/printable web guides are available online and used throughout both programs to demonstrate the use of wiring diagrams. By following along as Jim navigates each diagram, viewers are able to identify all relevant components and isolate the malfunctioning parts of each unit being examined. **See page 3.** 



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