

## **Principles of Home Inspection**

Principles of Home Inspection is a 100 hour professional development online course. This comprehensive online course reviews all major home systems and provides in-depth coverage of system and component problems, their practical implications, and inspection strategies for finding them.

### **Course Description**

Principles of Home Inspection provides comprehensive, in-depth training for students wishing to enter the profession or enhance their existing knowledge. With clear descriptions, detailed technical illustrations, and useful summaries of products, this course is the most exhaustive distance training available. Created by Carson Dunlop & Associates, one of the most successful home inspection companies in North America, Principles of Home Inspection is based on years of practical experience in both inspecting homes and training inspectors.

### **Communications and Professional Practice**

#### Learning Objectives

By the end of this unit you should be able to:

- describe the difference between a home inspection and an appraisal
- indicate the average time required to complete a home inspection
- list four advantages of having clients attend the inspection
- describe what a home inspector's clothing and vehicle should reflect
- list ten basic tools that home inspectors typically use
- list the four parts of a home inspection and the amount of time typically spent on each
- list a typical routine or flow of an inspection
- describe the macro/micro approach to home inspection
- list ten things inspectors commonly fail to put back the way they found
- describe the purpose of the closing discussion
- list four reasons reports are needed
- list ten common components of the body of the report, and give an example of each

### **Exteriors**

#### Learning Objectives

By the end of this unit you should be able to:

- identify ten types of exterior siding material
- recognize soffits and fascia
- describe how windows and doors are made weather-tight
- describe the function of trim, flashings, and caulking
- list the common problems with each of the types of siding, soffits, fascia, windows, doors, trim, flashing, and caulking
- recognize structural and safety components, including steps, railings, columns, beams, joists, floors, roofs, skirting, doors, drains, and walls
- assess the grading of the land around a house and recognize the effects of poor grading
- identify what gutters and downspouts are made of and assess their condition
- understand how window wells are built, what common problems can be found with them, and the implications of the problems
- inspect walks, driveways, and grounds for their condition and usability to the occupant

- understand how retaining walls are built and how they fail
- list the common implications of failure or non-performance for each component
- describe the inspection strategy and tools necessary to identify common problems with each component

## **Roofing**

### Learning Objectives

By the end of this unit you should be able to:

- list three roof functions
- define roof pitch and square
- describe four components of the goal of the roof inspection
- be familiar with the installation details associated with different kinds of roofing materials.
- recognize and distinguish the different types of roofing materials
- understand the typical conditions for various roofing materials and how to inspect for them
- know the inspection strategies used to identify roof problems
- identify the various types of steep roof and low-slope roof flashings
- know the materials and locations where flashings are used
- know the common problems associated with flashings
- describe the problems specific to low-slope roofs

## **Structure**

### Learning Objectives

By the end of this unit you should be able to:

- list nine steps in crack analysis
- define dead loads and live loads
- list twelve common foundation problems
- list four types of cracks, their characteristics and implications
- describe how crack size can be misleading
- list four things you may recommend to clients with respect to cracks
- know the implications of pier movement and how to identify it
- understand the function of sills and common sill problems.
- list common problems with columns and their implications.
- describe the function of beams and common problems associated with them.
- list twelve common joist problems
- list nine subflooring problems
- list seven concrete floor problems
- list six common problems with masonry walls in addition to cracks.
- list seven common wood frame wall problems
- list nine common lintel problems
- define rafters, roof joists and ceiling joists and identify the common problems associated with each
- identify different types of trusses, including functions and typical conditions associated with them.
- know the function of sheathing, the types available and common conditions associated with it

## **Insulation**

### Learning objectives

By the end of this unit you should be able to:

- define the terms insulation, vapor retarder, and air barrier, including their purposes
- describe the implications of inadequate insulation and air/vapor barrier
- name two kinds of house ventilation
- define thermal bridges and perm
- list eight common insulation materials and their forms
- describe the issues surrounding urea formaldehyde foam insulation
- give two reasons it is important to control air movement through building walls and roofs
- list six qualities of a good air barrier and five qualities of a good vapor barrier
- indicate whether vapor barriers should be on the warm or cold side of walls
- explain why a vapor barrier should be laid on an earth floor in a crawlspace
- list the functions and types of roof vents
- give two reasons for venting house air
- list three general approaches to ventilation
- state at least three precautions you should take when inspecting attics
- list the ventilation-related problems (and their implications) you may find in attics
- list three common problems with wall insulation
- list nine common problems with basement and crawlspace insulation and ventilation
- list seven common areas where insulation may be provided over unheated spaces
- list ten problems with exhaust fans, and their implications

## **Interiors**

### Learning Objectives

By the end of this unit you should be able to:

- list the problems and implications related to concrete, wood, carpet, resilient, and ceramic flooring
- list the problems and implications related to plaster, drywall, and wood walls
- list two party wall problems and their implications
- describe two inspection strategies that help with ceiling inspections
- list the problems and implications related to plaster, drywall, metal, and wood ceilings
- list five trim problems and their implications
- list nine countertop problems and their implications
- list twelve cabinet problems and their implications
- define tread width, rise, run, stringer, winder, guardrail, handrail, and baluster as they apply to interior stairs
- list 35 common problems with stairs and their implications
- list four window functions and eight common window types
- list six frame problems and their implications
- list eight sash problems and their implications
- list six interior trim problems and their implications
- list six glass problems and their implications
- list five hardware problems and their implications
- explain how window size or location can be a problem

- list thirteen door and frame problems and their implications
- list six implications of basement and crawlspace problems
- list twenty signs of moisture in basements and crawlspaces

## **Electrical Systems**

### Learning Objectives

By the end of this unit you should be able to:

- recognize the electrical service drop and service entrance and how they should be arranged
- determine the size of the service and how to advise your client about it
- recognize the problems commonly found on the service drop and their implications
- identify common problems found on service entrance conductors and their implications
- understand the function of the service box or service panel
- be familiar with the arrangement and location of the service box
- recognize the common conditions found in service boxes and their implications
- know the functions of grounding and bonding
- understand the common problems found in system grounds and their implications
- identify 17 common problems with branch circuit wiring, and their implications
- recognize conditions found in all panels, as well as those unique to subpanels, fuses, breakers and panel wires
- explain the relative advantages of fuses and breakers
- understand how wires should be connected and supported
- understand how to identify knob-and-tube wire and the issues associated with it
- know how to identify aluminum wiring and the issues associated with it
- be familiar with common problems at lights and receptacles and their implications
- be familiar with the strategies for inspecting the various components of household electrical systems

## **Gas Furnaces**

### Learning Objectives

- By the end of this unit you should be able to:
- list and describe the two most common types of gas burners
- describe the function of the gas valve, pilot light and thermocouple, on a residential furnace
- list nine conditions that may be found with gas combustion equipment
- list two problems commonly found with gas furnace heat exchangers
- list six problems found with furnace cabinetry
- describe the setting and function of the three fan/limit controls
- list six problems found with fan controls
- list seven conditions found with thermostats
- list eleven conditions that are found with vent connectors
- list eight components of the duct system in a forced air system
- list twelve problems with duct systems
- list twelve components of a conventional gas-fired furnace
- outline the four basic components of the inspection and testing procedure for a conventional gas furnace

- list the components of an induced-draft condensing furnace
- list and describe the eight common problems found with high-efficiency furnaces
- outline the basic testing procedure for a high-efficiency furnace
- describe the life expectancies of different efficiency gas furnaces

## **Oil Furnaces**

### Learning Objectives

By the end of this unit you should be able to:

- list five problems found with oil storage tanks
- list four problems found with oil, fill and vent pipes
- list four problems found with oil supply lines
- list two problems found with the oil filter
- describe in five sentences the basic workings of an oil burner
- list six problems found with oil burners
- describe three different materials commonly used for refractories
- list two problems found with refractories
- describe the function of and problems associated with the primary controller
- describe the operation of a barometric damper
- list six problems commonly associated with the barometric damper
- list twelve problems associated with the vent connector
- describe the basic difference between a mid-efficiency and a conventional oil furnace, and list two of the concerns

## **Hot Water Boilers**

### Learning Objectives

By the end of this unit you should be able to:

- list four materials used in boiler construction
- list ten differences between boilers and furnaces
- list the advantages and disadvantages of hot water heat
- list three problems found with boiler heat exchangers
- list and describe in one sentence the function of the four types of automatic safety controls
- list fifteen problems found with automatic safety controls
- describe eight normal operating controls
- list the common problems found with these operating controls
- List four problems found with expansion tanks
- list three problems found with pumps
- list four problems found with pipes
- list the eight problems found with radiators, convectors and baseboards
- list the four problems found with radiant heating
- list the four problems found with tankless coils
- list the problems found with high-efficiency boilers
- understand how long different boilers last
- understand how to use a general rule to determine the adequacy of the boiler capacity

## **Other Aspects of Heating**

### Learning Objectives

By the end of this unit you should be able to:

- list five components of masonry chimneys
- list 25 common masonry chimney problems and their implications
- list 13 common metal chimney or vent problems and their implications

- define in one sentence each creosote, ash and soot
- list four main components of a wood stove
- describe the difference between radiant and convective stoves
- list 25 common wood stove problems
- describe in one sentence three types of wood-burning fireplaces
- list seven components of masonry fireplaces and their common problems
- describe the implication of each problem
- identify electric heating systems
- recognize all of the components and describe each of their functions
- list the common problems encountered with electric heating systems
- describe the implications of each of these problems

## **Air conditioning and Heat Pumps**

### Learning Objectives

By the end of this unit you should be able to:

- define in one sentence each the function of the compressor, condenser, evaporator and expansion device
- describe in two sentences how air conditioners dehumidify
- list ten factors that affect how much air conditioning is needed
- explain the implications of an undersized air conditioning system
- explain the implications of an oversized air conditioning system
- describe the location of the air conditioning compressor
- describe in one sentence the function of a crankcase heater
- list nine common compressor problems
- describe the location and function of the condenser fan and the evaporator fan
- list four common condenser fan problems
- list seven common evaporator fan problems
- list eight common duct problems
- describe the function and appropriate locations for thermostats
- list seven thermostat problems
- give the normal life expectancy for conventional air conditioner compressors
- list nine tricks for identifying heat pumps
- list seven common heat pump problems

## **Plumbing**

### Learning Objectives

By the end of this unit you should be able to:

- describe functional flow
- list three things that can go wrong with supply piping
- list four factors which affect the pressure or flow at a fixture
- describe the location and function of a water pressure regulator
- list six problems commonly found with pressure regulators
- list seven different materials used for supply piping
- describe the weaknesses and strengths of each type of pipe
- list four common problems with service piping
- describe seven problems found with supply piping
- identify common water heaters and recognize all of their components
- list the common problems found with various types of water heaters
- identify common drain, waste and vent materials and distinguish their function
- list the common problems found with each DWV component
- describe the implication of nonperformance of these components

- describe the inspection strategy for identifying problems
- identify each of the major plumbing fixtures, their function, and how they should be connected to the plumbing system
- list the common problems found with each fixture, their implications, and the inspection strategy used to identify them

## **Appliances**

### Learning Objectives

The course provides an overview of common household appliances

- Most major household appliances have life spans of 10 to 20 years. They can cost several hundred dollars to replace, but do not generally play a major part in the decision to buy a house.
- Appliances can be changed much more easily than the structure, roof, plumbing, heating or electrical systems.
- This appendix provides an overview of some common household appliances. A tremendous variety of appliances are available, and not all are considered in these pages.
- We recommend that owner's manuals be consulted for regular maintenance on all household appliances. If the manuals are not on hand, they are usually available from the manufacturer.
- Household appliances may be built in, or portable (often referred to as freestanding). Generally speaking, installed appliances will remain with the house when it is sold, but freestanding appliances are often removed.
- The purchase agreement normally stipulates which appliances stay with the house.