

NOCTI

NOCTI
500 N Bronson Avenue
Big Rapids, MI 49307-9036
nocti.org
800.334.6283 Ext 219

Instructor Prep Pack

Pilot Testing 2023-2024
Equipment, Materials, and
Supplies

Table of Contents (Click on title to follow link)

ADMINISTRATIVE ASSISTING - PILOT (4201).....	1
AGRICULTURE MECHANICS - PILOT (2202).....	2
AGRICULTURE MECHANICS - PILOT (2202) - (continued).....	3
BIOTECHNOLOGY - PILOT (4275).....	4
BIOTECHNOLOGY - PILOT (4275) - (continued)	5
BIOTECHNOLOGY - PILOT (4275) - (continued)	6
BUILDING CONSTRUCTION OCCUPATIONS - PILOT (4111)	7
BUILDING CONSTRUCTION OCCUPATIONS - PILOT (4111) – (continued).....	8
BUILDING CONSTRUCTION OCCUPATIONS - PILOT (4111) – (continued).....	9
BUSINESS INFORMATION PROCESSING - PILOT (4213).....	10
CAD - PILOT (4983)	11
COLLISION REPAIR - PILOT (4306).....	12
COLLISION REPAIR - PILOT (4306) - (continued).....	13
COLLISION REPAIR AND REFINISHING TECHNOLOGY - PILOT (3383).....	14
COLLISION REPAIR AND REFINISHING TECHNOLOGY - PILOT.....	15
(3383) - (continued)	15
COMMERCIAL FOODS - PILOT (4120)	16
COMMERCIAL FOODS - PILOT (4120) - (continued).....	17
COMMERCIAL FOODS - PILOT (4120) - (continued).....	18
COMMERCIAL FOODS - PILOT (4120) - (continued).....	19
COMPUTER NETWORKING FUNDAMENTALS - PILOT (4614).....	20
COMPUTER REPAIR TECHNOLOGY - PILOT (4615).....	21
COMPUTER REPAIR TECHNOLOGY - PILOT (4615) - (continued)	22
COMPUTER TECHNOLOGY - PILOT (4222).....	26
ELECTRICAL CONSTRUCTION TECHNOLOGY - PILOT (4230).....	26

ELECTRICAL CONSTRUCTION TECHNOLOGY - PILOT (4230) - (continued)	26
ELECTRICAL CONSTRUCTION TECHNOLOGY - PILOT (4230) - (continued)	25
ELECTRICAL OCCUPATIONS - PILOT (4029).....	28
ELECTRICAL OCCUPATIONS - PILOT (4029) - (continued)	29
FLORICULTURE - PILOT (4349)	28
FLORICULTURE - PILOT (4349) - (continued).....	32
FLORICULTURE - PILOT (4349) - (continued).....	32
FLORICULTURE - PILOT (4349) - (continued).....	31
FLORICULTURE - PILOT (4349) - (continued).....	32
FLORICULTURE - PILOT (4349) - (continued).....	33
FLORICULTURE-GREENHOUSE - PILOT (4350)	33
FOREST PRODUCTS AND PROCESSING - PILOT (4037).....	34
FOREST PRODUCTS AND PROCESSING - PILOT (4037) - (continued)	35
HORTICULTURE-LANDSCAPING - PILOT (4150).....	36
HORTICULTURE-LANDSCAPING - PILOT (4150) - (continued)	37
HOSPITALITY MANAGEMENT-FOOD AND BEVERAGE - PILOT (3179).....	38
HOSPITALITY MANAGEMENT-FOOD AND BEVERAGE - PILOT (3179) -	39
(continued)	39
HOSPITALITY MANAGEMENT-FOOD AND BEVERAGE - PILOT (3179) -	40
(continued)	40
HOSPITALITY MANAGEMENT-FOOD AND BEVERAGE - PILOT (3179) - (continued)	41
HOSPITALITY MANAGEMENT-LODGING - PILOT (3180)	42
INDUSTRIAL ELECTRICTY - PILOT (3050).....	43
INDUSTRIAL ELECTRICTY - PILOT (3050) - (continued).....	45
INDUSTRIAL ELECTRICTY - PILOT (3050) - (continued).....	46
INDUSTRIAL ELECTRICTY - PILOT (3050) - (continued).....	47

INDUSTRIAL MAINTENANCE MECHANICS - PILOT (3074).....	48
INDUSTRIAL MAINTENANCE MECHANICS - PILOT (3074) - (continued)	49
INDUSTRIAL MAINTENANCE MECHANICS - PILOT (3074) - (continued)	50
MANUFACTURING TECHNOLOGY - PILOT (3084).....	51
MANUFACTURING TECHNOLOGY - PILOT (3084) - (continued)	52
MANUFACTURING TECHNOLOGY - PILOT (3084) - (continued)	53
MEDICAL ASSISTING - PILOT (4555).....	54
MEDICAL ASSISTING - PILOT (4555) - (continued)	55
NURSING ASSISTING - PILOT (4358).....	56
NURSING ASSISTING - PILOT (4358) - (continued)	57
PRE-ENGINEERING/ENGINEERING TECHNOLOGY - PILOT (3475)	58
PRODUCTION AGRICULTURE - PILOT (3163)	59
PRODUCTION AGRICULTURE - PILOT (3163) - (continued).....	60
TECHNICAL DRAFTING - PILOT (4154).....	61

ADMINISTRATIVE ASSISTING - PILOT (4201)

Each test participant will require a work area supplied with the following:

- Computer with word processing and spreadsheet software
- Printer with colored ink
- Pen and pencil
- Blank paper (8-1/2 by 11 inches) **NOTE: All jobs may be completed on standard plain white paper**
- Business size envelopes (No. 10)
- Dictionary
- Office reference manual
- One file folder
- Copy holder (optional)
- Adjustable chair

JOB 1: BUSINESS WRITING - MEMO PREPARATION (15 minutes)

JOB 2: DOCUMENT PROCESSING (1 hour and 20 minutes)

JOB 3: PREPARING A SPREADSHEET (40 minutes)

JOB 4: CREATING A CHART (25 minutes)

JOB 5: CREATING A FLYER (20 minutes)

AGRICULTURE MECHANICS - PILOT (2202)

JOB 1: HORIZONTAL BUTT WELD - SMAW (30 minutes)

- All necessary protective clothing and safety equipment
- Two pieces of mild steel plate (per participant), 3/8-inch by 2-inch by 6-inch
- AC-DC or AC welding machine
- Welder's helmet
- Chipping hammer
- Wire brush
- Four (4) E6011 electrodes, 1/8 inch diameter

JOB 2: OXYACETYLENE CUTTING (25 minutes)

- All necessary protective clothing and safety equipment
- One piece of mild steel plate (per participant) 1/4-inch by 5-inch square
- Provide an oxyacetylene cutting rig with the proper tip for this job
- Soapstone
- Steel ruler (12 inch)

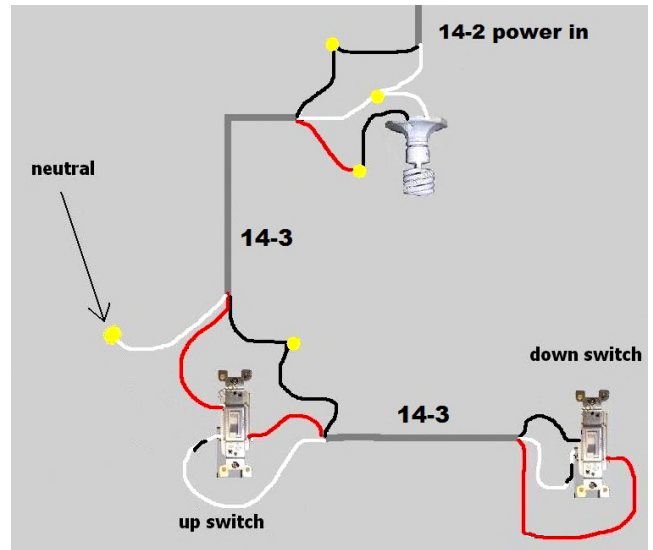
JOB 3: TROUBLESHOOT AND DIAGNOSE A GAS ENGINE (30 minutes)

- All necessary protective clothing and safety equipment
- One small gas engine with low or incorrect compression, with fuel removed
- Operator's manual for engine being used
- Compression test kit
- Spark plug wrench
- Assorted tools, including some that would be incorrect for use with Job 3
- Spark plug gapper or feeler gauge
- Spark tester
- Pencil

AGRICULTURE MECHANICS - PILOT (2202) - (continued)

JOB 4: INSTALL TWO 3-WAY SWITCHES TO CONTROL A LIGHT (45 minutes)

- All necessary protective clothing and safety equipment
- Wiring board (as shown in Job 4 diagram)
- Two 3-way switches
- Screwdriver (Phillips #2 and flat)
- 14 gauge, 3-wire NM electrical cable
- 14-gauge, 2-wire NM electrical cable
- Lighting outlet without built-in receptacle
- Light bulb for testing
- Wire nuts
- Grounding clamps
- Electrical pliers
- Needlenose pliers
- Wire stripper



The power source can be made from an extension cord which can be plugged into a standard receptacle.

JOB 5: CUT, MARK, AND DRILL LUMBER (20 minutes)

- All necessary protective clothing and safety equipment
- Various lengths of 1- by 4-inch boards that are at least 3 feet long
- Framing square or speed square
- Pencils
- Portable electric drill and drill bit (1/4-inch)
- Portable electric circular saw (hand saw is acceptable)
- Tape measure

BIOTECHNOLOGY - PILOT (4275)

NOTE: Participants will be required to demonstrate complete glove technique at the beginning and end of Job 1. Participants will only be required to *verbally indicate the need to wear gloves* at the appropriate times during the remainder of all other jobs.

Designate area for used materials for all jobs prior to testing.

JOB 1: COLONY ISOLATION QUADRANT STREAKING BACTERIA METHOD **(15 minutes)**

- Liquid disinfectant with paper towels
- Boxes of various size gloves, eye protection, and scrubs or lab coat
- Biohazard bag container
- 4 sterile disposable or 1 metal inoculating loop(s) per student
- Test tube rack
- Prepared agar plates (100 mm petri dishes, 1 per participant)
- “Mock” bacterial broth culture tube containing at least 3 ml of cloudy solution containing no bacteria and labeled *E.coli*
- Laboratory marking pens
- Incubator
- Bunsen burner or microincinerator if using metal inoculating loops

JOB 2: USING VOLUMETRIC EQUIPMENT: USING MICROPIPETTES (15 minutes)

Step 1:

- One index card labeled Step 1
- Two micropipettes of each size listed below (total of six needed for each station)
 - P 10 or P20
 - P100 or P200
 - P1000

Step 2:

- One index card labeled Step 2
- One micropipette of each size below:
 - P 10 or P20
 - P100 or P200
 - P1000
- Appropriate micropipette tips
- Centrifuge 1.5 mL tube (one per participant)
 - NOTE:** Ensure all tubes are from the same manufacturer
- Centrifuge tube rack
- Lab marker
- At least 50 mL of colored solution in a beaker
- Waste container for disposal of tips

BIOTECHNOLOGY - PILOT (4275) - (continued)

JOB 3: USING VOLUMETRIC EQUIPMENT: SEROLOGICAL PIPETTES

(30 minutes)

- Food color (red, yellow, blue)
- 3 beakers (approximately 100 mL) per workstation for stock solution
- Lab marker
- 15 mL screw cap conical tubes (6 tubes per participant)
- 5 and 10 mL non-sterile serological pipettes (minimum of 8 of each size per participant)
- Pipette pumps
- Test tube rack
- Scratch paper and blue or black ink pen
- Waste container
- Lab tissues/wipes

JOB 4: MAKING A MOLAR SOLUTION (20 minutes)

- NaCl in manufacturer's container
- Weigh boats
- Spatula
- Tabletop electronic balance (0.1 g accuracy)
- Volumetric glassware (volumetric flask or graduated cylinder)
- Beaker (150/250 mL minimum)
- dH₂O
- Container for prepared solution
- Stir plate
- Stir bar
- Stir bar retriever
- Wash bottle/beaker containing dH₂O
- Transfer pipettes
- Labeling tape
- Lab marker
- Calculator
- Scratch paper and writing instrument

BIOTECHNOLOGY - PILOT (4275) - (continued)

Note: Ensure student's workstation is as private as possible for Job 5

JOB 5: MAKING A SERIAL DILUTION (25 minutes)

- Gloves, eye protection, lab coat or scrubs
- 5x 15 ml conical tubes per student:
 - a. 1x 15mL conical tube containing 10ml of a colored stock solution
 - b. 4x 15mL conical tubes for student dilution
- 250 ml of dH₂O
- Food coloring
- Choose:
 - a. P1000 and P1000 tips and/or
 - b. (5x) 5 mL and 10 mL serological pipettes and pipette pump
- Lab marker at each workstation
- Calculator
- Test tube rack
- Scratch paper and writing instrument
- Waste container
- Food color

BUILDING CONSTRUCTION OCCUPATIONS - PILOT (4111)

JOB 1: SOLDER PIPE (30 minutes)

Other materials may be substituted for dimensional lumber for Job 2. **Participants may use a non-programmable calculator for this assessment.**

JOB 1: SOLDER PIPE

- 1/2-inch copper tubing, 18 inches minimum
- One - 1/2-inch 90-degree elbow (copper)
- 1/2-inch cap
- 1/2-inch male adapter (hose bibb for leak test)
- Sink or other pressurized water supply
- Water hose
- Lead-free solder
- Flux
- Flux brush
- Tubing cutter/reamer
- CHANNELLOCK® or other grooved-joint pliers Plumber's torch with igniter
- Tape or rule
- Steel wool/emery cloth/wire brush, 1/2-inch fitting
- Joint compound or Teflon® tape
- Shop rags
- Appropriate personal protective equipment (PPE)
- ABC fire extinguisher
- Pencil or marker

JOB 2: LAY OUT RAFTER (30 minutes)

Other materials may be substituted for dimensional lumber for Job 2.

- One 2-inch by 6-inch by 10-foot dimensional lumber
- Sawhorses
- Stair gauges
- Framing square, as needed
- Circular saw
- Extension cord, as needed
- Hand saw
- Clamp
- Speed square
- Tape measure, 12-foot minimum
- Appropriate personal protective equipment (PPE)
- Pencils

BUILDING CONSTRUCTION OCCUPATIONS - PILOT (4111) – (continued)

JOB 3: CALCULATE AND CUT A STUD (10 minutes)

- One 2-inch by 4-inch by 4-foot dimensional lumber
- Sawhorses
- Framing square, as needed
- Circular saw
- Extension cord, as needed
- Clamps
- Speed square
- Tape measure, 12-foot minimum
- Appropriate personal protective equipment (PPE)
- Pencils

JOB 4: ROUGH AND FINISH ELECTRICAL (30 minutes)

A studded or framed workstation must be provided by the instructor and constructed PRIOR to test administration. This workstation is intended to allow participants to mount boxes and switches, staple, run wire, and connect switches and receptacles. The workstation is **NOT** an evaluated item and can be constructed from available materials (including used) and can be of varying size (part of a larger framed structure, freestanding, or small in size and table-mounted with vices or clamps).

- One single-pole switch
- Three non-metallic device boxes
- Two duplex receptacles
- One 3-way switch
- 6 feet of 14/2 cable
- 6 feet of 14/3 cable
- 10 Yellow wire nuts
- 10 Red wire nuts
- Electrical tape
- 10 Cable staples
- Lineman pliers
- Long-nosed pliers
- Hammer
- Flathead screwdriver
- Phillips screwdriver
- Diagonal cutter
- Measuring tape
- ROMEX® strippers and/or retractable utility knife
- Wire strippers
- Appropriate personal protective equipment (PPE)
- Pencils

NOTE: The additional switches and receptacles are included so the participant can demonstrate the correct selection of the switch and receptacles.

BUILDING CONSTRUCTION OCCUPATIONS - PILOT (4111) – (continued)

JOB 5: 8-INCH BLOCK WALL CONSTRUCTION (60 minutes)

- Four corner (jamb) blocks
- Two half-corner (jamb) blocks
- Four-line (stretcher) blocks
- 2-foot and 4-foot levels
- Trowel
- Convex jointer
- Prepared mortar (mixed mortar ready to temper)
- Mortar board and stand
- Mason's brush
- Measuring tape or modular rule
- Brick hammer
- Water (as needed)
- Appropriate personal protective equipment (PPE)
- Pencils

JOB 6: PVC PIPE ASSEMBLY (20 minutes)

- PVC pipe 1-1/2 inch (28 inches per participant)
- 2 PVC 90-degree elbows for 1-1/2-inch PVC pipe
- Tape measure
- Marker
- Pencil
- PVC cutting tool
- Utility knife
- PVC primer (purple)
- PVC cement
- Rubber gloves
- Safety glasses

BUSINESS INFORMATION PROCESSING - PILOT (4213)

JOBS 1-4

1. Computer workstation with the following software:

- word processing
- spreadsheet
- database
- presentation (e.g., PowerPoint, Keynote, Google Slides)

2. Printer (preferably color) with at least 12 pieces of paper per participant.

JOB 1: PERFORM A MAIL MERGE (45 minutes)

JOB 2: PREPARING A SPREADSHEET (40 minutes)

JOB 3: PREPARING A DATABASE (40 minutes)

JOB 4: PREPARING A PRESENTATION (20 minutes)

CAD - PILOT (4983)

JOB 1 and JOB 2

- CAD workstation (Any CAD system software with ability to output to .pdf and computer system)
- Secure storage location
- For Evaluator output:
 - If printing (plotter/printer) use ANSI A-size paper (8-1/2 x 11) or a computer with .pdf viewing software.
- Flash drive or equivalent storage media (e.g., transfer media, cloud, dropbox folder, etc.)
- Engineer's scale for Evaluator (to use when evaluating the drawings)
- Scratch paper
- Pencil
- ANSI A-size paper (8-1/2 x 11)

NOTE: Output file to .pdf format. Evaluator may evaluate drawing on the computer screen or printed on paper.

JOB 1: CREATE AN ORTHOGRAPHIC DRAWING WITH A SECTION VIEW
(30 minutes)

JOB 2: CREATE AND DOCUMENT AN ASSEMBLY (2 hours)

COLLISION REPAIR - PILOT (4306)

JOB 1: WELDING (60 minutes)

- MIG/GMAW welder, prepared to weld test coupons
- 1-1/2-inch by 3-inch minimum steel test coupons; minimum 21 per participant, 18 gauge (*At least three of the test coupons must have two 5/16-inch holes for plug welding*)
- Clamps/vise grips
- Anti-spatter compound
- Welding screen, as needed
- Side cutters
- MIG welding helmet
- Welding gloves
- Welding jackets or long sleeves
- Safety glasses

JOB 2: SHEET METAL REPAIR (60 minutes)

- Body panel
- Wax and grease remover
- Air gun/blow gun
- Shop towels
- Table or stand for panel
- Ball peen hammer (to put a dent in the fender)
- Assorted hammers and dollies
- Extension cord
- Grinder (24 to 50 grit)
- Dual action sander
- Body filler
- Glazing putty
- Mixing board
- Spreader
- Cheese grater
- Sanding block (assorted sandpaper)
- Hand board (assorted sandpaper)
- Metal file
- Slapper or Slapping spoon (optional)
- Uni-resistant gloves
- Safety glasses
- Particle mask
- Chemical-resistant gloves
- Hearing protection (optional)

COLLISION REPAIR - PILOT (4306) - (continued)

JOB 3: VEHICLE MEASUREMENT (15 minutes)

- 1996 or newer vehicle
- Tram gauge
- Pencils
- Scrap paper
- Safety glasses
- Non-programmable calculator

COLLISION REPAIR AND REFINISHING TECHNOLOGY - PILOT (3383)

JOB 1: WELDING (30 minutes)

- MIG/GMAW welder, prepared to weld test coupons
- 1-1/2-inch by 3-inch minimum steel test coupons; minimum 21 per participant, 18 gauge (*At least three of the test coupons must have two 5/16-inch holes for plug welding*)
- Clamps/vise grips
- Anti-spatter compound
- Welding screen, as needed
- Side cutters
- MIG welding helmet
- Welding gloves
- Welding jackets or long sleeves
- Safety glasses

JOB 2: SHEET METAL REPAIR (45 minutes)

- Body panel
- Wax and grease remover
- Air gun/blow gun
- Shop towels
- Table or stand for panel
- Ball peen hammer (to put a dent in the fender)
- Assorted hammers and dollies
- Extension cord
- Grinder (24 to 50 grit)
- Dual action sander
- Body filler
- Glazing putty
- Mixing board
- Spreader
- Cheese grater
- Sanding block (assorted sandpaper)
- Hand board (assorted sandpaper)
- Metal file
- Slapper or Slapping spoon (optional)
- Uni-resistant gloves
- Safety glasses
- Particle mask
- Chemical-resistant gloves
- Face shield

COLLISION REPAIR AND REFINISHING TECHNOLOGY - PILOT (3383) - (continued)

JOB 3: MASKING AND TAPING (45 minutes)

- 4-door application, quarter panel used in place of door instructions
- Fender and a door (all plastic)
- Foam tape for doors/under hood
- Blue fine line
- R & I stickers
- Wax and grease remover
- Shop towels
- 1-1/4 to 2-inch masking tape
- Razor blades
- Tire covers
- Safety glasses
- Chemical-resistant gloves

Provide the technical information manuals that accompany paint products.

JOB 4: REFINISHING (1 hour)

- One ready-to-paint panel
- HVLP spray gun(s)
- Appropriate tip(s) for spray gun(s)
- Final prep or pre-paint cleaner
- Basecoat paint
- Blow gun
- Reducers
- Hardeners
- Clearcoat
- Tack rags
- Disposable towels
- Paint mixing area
- Paint spray booth
- Assorted sandpaper
- Stand to hold panels in vertical position
- Fresh air supply system with eye protection
- Chemical-resistant gloves

COMMERCIAL FOODS - PILOT (4120)

JOB 1: IDENTIFICATION OF HAND TOOLS, HERBS, SPICES, AND FLAVORINGS **(25 minutes)**

Place 25 labels or tags with numbers 1 through 25 (only) on the following items

Display the following items:

- | | |
|-------------------|------------------------------|
| 1. zester | 14. cilantro |
| 2. channel knife | 15. rosemary* |
| 3. melon baller | 16. thyme* |
| 4. mandoline | 17. sage |
| 5. whetstone | 18. coriander |
| 6. offset spatula | 19. nutmeg (whole or ground) |
| 7. clam knife | 20. cayenne pepper |
| 8. china cap | 21. salt* |
| 9. skimmer | 22. curry |
| 10. fillet knife | 23. peppercorns |
| 11. bench scraper | 24. soy sauce * |
| 12. food mill | 25. sesame seeds |
| 13. basil | |

Fresh seasonings marked with an asterisk () may be reserved to use again in Job 3 –
Cooking Skills*

NOTE: Herbs, spices, and flavorings may be fresh, dried, or ground.

Appropriate substitutions of comparable difficulty may be made if necessary, but the number of items on display should not change.

If tools or food items are not available, you may use clear visual images of these items (e.g., photographs).

COMMERCIAL FOODS - PILOT (4120) - (continued)

JOB 2: KNIFE SKILLS (40 minutes)

- Assorted pre-sharpened knives for cutting vegetables
- Sharpening steel
- Cutting board with mat or towel
- Towels
- Sanitation buckets and solution

The following will be prepared in Job 2, and then reserved for Job 3:

- Onion, 1
- Garlic cloves, 3
- Celery, 1 rib
- Parsley, 1/4 bunch
- Carrot, 1 large
- Red bell pepper, 1
- Green bell pepper, 1/2
- Fresh ginger, 1 small
- Scallion, 1
- Fresh herbs, assorted mixed, 2 ounces
- Cucumber, 1/4

COMMERCIAL FOODS - PILOT (4120) - (continued)

JOB 3: COOKING SKILLS (per participant) (2 hours)

NOTE: Ovens are to be preheated to 375 degrees Fahrenheit by the evaluators prior to beginning Job 3.

- Two chicken breasts, split (6 to 8 ounces each, with bones and skin)
- Chicken stock, 2 to 3 cups
- Rice – 1/2 cup long, white
- Flour, all purpose, 8 ounces
- Granulated sugar, 1/4 tsp
- Vegetable oil, 8 ounces
- Peanut or sesame oil, 3 tbsp
- Butter, 8 ounces
- 1/2 cup buttermilk (1/2 cup milk + 1 tsp white vinegar, can be substituted)
- Heavy cream – 1/4 cup
- Cheddar cheese, shredded, 1/4 cup
- Lemon juice, 2 teaspoons
- Sweet and sour sauce, 3 tablespoons
- Soy sauce, 1 tablespoon
- Cider vinegar, 1 ounce
- Dijon mustard, 1 teaspoon
- Salt
- Pepper (black and white)
- Sea salt
- Onion powder
- Garlic powder
- Garlic, fresh
- Rosemary, fresh
- Thyme, fresh
- Sesame seeds
- Fresh herbs, assorted mixed, 2 ounces
- Parsley, fresh, 1/4 bunch
- Salad greens, mixed, 4 ounces (prewashed)
- Red bell pepper, 1
- Green bell pepper, 1/2
- Celery, 1 rib
- Onion, 1
- Granulated garlic 1/4 tsp
- Baking powder – 2 tsp
- Carrot, 1 large
- Snow peas, 2 ounces
- Cucumber, 1/4
- Ginger
- Scallions

COMMERCIAL FOODS - PILOT (4120) - (continued)

ADDITIONAL EQUIPMENT NEEDED

- Scale
- Range top
- Food storage containers (10)
- Assortment of knives (e.g., 1 chef, 1 paring)
- Assorted sauté pans
- Baking sheet pan
- Assorted pots and pans (e.g., 1 to 2 qt. sauce pan with lid)
- Appropriate pan/pot covers
- Service plates (2 each course: 2 salad plates, 4 dinner plates, etc.)
- Colander
- Vegetable peeler
- Spatulas
- Cutting board with mat
- Oven
- Oven mitts
- Disposable gloves
- Wire whisk
- Knife steel
- Small stainless steel bowl
- Tongs
- Measuring cups
- Measuring spoons
- Mixing spoon
- Pastry cutter
- Peppermill
- Towels
- 3-compartment sink
- Tasting spoons
- Sanitizing buckets
- Sanitizing solution
- Rolling pin
- Round biscuit cutter
- Pocket Thermometer
- Pencils
- Kitchen timer

COMPUTER NETWORKING FUNDAMENTALS - PILOT (4614)

NOTE: All equipment below for this performance assessment must be tested and in proper working condition (unless otherwise stated) prior to the testing date.

JOB 1: SET UP A SIMPLE LAN WITH TWO WORKSTATIONS AND HARDWARE INSTALLATION (1 hour)

Each participant will require TWO workstations for this job.

- **For each job, start with a fresh install of a Windows Operating System.**
- **Workstation #1 must have a NIC installed and the NIC driver properly configured.**
- **Workstation #2 must have a NIC installed that is not functioning.**
- **A copy of the NIC driver needs to be available in case the participant needs to reinstall the driver.**

For each participant:

- Two Windows-based PC workstations, labeled Workstation #1 and Workstation #2, with field-replaceable unit (FRU) NICs
- The NIC in Workstation #1 is correctly configured
- The NIC in Workstation #2 needs to be non-functioning
- Copies of the proper NIC drivers
- Two (correctly terminated) Cat-5 or newer straight-through cables
- An Ethernet hub or switch (at minimum: a 4- or 8-port) with appropriate AC adaptor
- NIC Adapter (PCI or PCI-E)
- Workstations booted, ready, and logged on with administrative access
- Writing utensils
- Paper

JOB 2: WIRELESS CONFIGURATION (45 minutes)

NOTE: The router must be on its own LAN and not associated with the organization's network.

- Multipurpose device (e.g., wireless router) with the ability to offer DHCP services and wireless connections with a minimum of WEP
- Documentation for device with default password and IP address
- PC to connect for configuration
- Patch cable (to connect the PC and multipurpose device)
- Paper

COMPUTER REPAIR TECHNOLOGY - PILOT (4615)

JOB 1: DEVICE IDENTIFICATION (25 minutes)

Use a combination of computers to represent all of the following components.

Sticker labels (20) for identifying the following features:

- Audio ports
- Auxiliary power connector
- CMOS battery
- CPU
- CPU cooling device
- CPU socket
- Ethernet connector (RJ45)
- HDMI
- Memory slot #1
- Molex connector
- Motherboard/system board
- Motherboard/system board power plug/P1
- Optical drive

- PCI or PCI express slot
- PSU
- RAM
- SATA connector
- USB 2.0 port
- USB 3.0 port
- Video card/onboard video

COMPUTER REPAIR TECHNOLOGY - PILOT (4615) - (continued)

NOTE: Job 2 requires the removal of the NIC. The evaluator or testing center must provide one computer for each student. The computer must have administrative privileges.

JOB 2: NEW NETWORK HARDWARE INSTALLATION AND TROUBLESHOOTING **(45 minutes)**

Provide the following:

- NIC from an alternate manufacturer (different from NIC removed from computer)
- Media (i.e., flash drive, CD) containing several drivers (only one correct)
- Pencil and scrap paper
- ESD wrist strap (not needed if using a NIC adapter)
- Computer maintenance tool kit (not needed if using a NIC adapter)

Participant computer minimum specifications (see NOTE above):

- Functional Windows OS with no conflicts in Device Manager (Windows 7 or later)
- Computer must have working sound, video, and NIC
- Pentium i3 (or newer)
- 1 GB memory (or more)
- 10 GB free space (or more) on the boot drive
- Internet connection

JOB 3: SOFTWARE INSTALLATION AND TROUBLESHOOTING (80 minutes)

Provide the following:

- Computer workstation with functional Windows OS (disable the hard drive in the BIOS)
- 500 GB computer hard drive or less (recommended)
- Open source antivirus/malware protection software package on appropriate media
- Network connection
- Pencil and paper

Setup Instructions:

Provide a working computer workstation with functional Windows OS. Consider having enough workstations to test multiple participants.

COMPUTER TECHNOLOGY - PILOT (4222)

JOB 1: BASIC NETWORK CONFIGURATION (1 hour)

- Two computers with a fresh installation of any current Windows OS with functioning NICs
- Administrator access provided to participant
- Multifunction wireless router reset to factory defaults. Supply default administrator/username and password to participant
- 2 straight-through Ethernet cables
- Pencil and scrap paper

JOB 2: TROUBLESHOOTING (1 hour)

- Working computer with two memory sticks, one not fully seated
- Auxiliary power connector disconnected from motherboard
- Power supply tester
- Basic computer tool kit including ESD strap

JOB 3: HARDWARE INSTALLATION (45 minutes)

- Working SATA hard drive and data cables to be installed
- Basic computer tool kit (Phillips head screwdriver)
- ESD wrist strap

JOB 4: COMPUTER MAINTENANCE (45 minutes)

- Computer with hard drive installed from Job 3 - verified by evaluator - working and named "NOCTI"
- Instructor - download Malwarebytes or Cleaner to be installed by participant
- Pencil and scrap paper

ELECTRICAL CONSTRUCTION TECHNOLOGY - PILOT (4230)

JOB 1: BEND CONDUIT (40 minutes)

- 1/2-inch EMT conduit, one 10-foot piece
- Two 1/2-inch, 1-hole conduit straps
- Two 1/2-inch conduit fittings
- Two 4-inch square boxes with 1/2-inch KOs
- Suitable work surface (4 by 4 plywood)

JOB 2: INSTALL DOOR CHIMES (40 minutes)

- One -15-amp single pole breaker
- One - dual tone door chime
- Two - push buttons (normally open, momentary closed contact)
- Ten feet of Bell wire
- Twenty - Bell wire staples
- Wire nuts appropriate to wire size
- Assorted wood screws
- One - transformer
- One - power source for transformer
- Assorted hand tools (screw drivers, hammers, wire cutters, etc.)
- Suitable work surface. Can be mounted on the same surface as the conduit, Job 1.

JOB 3: GFCI RECEPTACLE AND SWITCHES INSTALLATION (1 hour and 40 minutes)

- Two-15-amp single pole breaker
- 15-amp GFCI receptacle and cover plate
- 15-amp duplex receptacle and cover plate
- Two 3-way switches and cover plate
- One 4-way switch and cover plate
- Keyless lamp holder
- Light bulb for Type-A lamp
- Five plastic, single-gang, nail-on boxes, 22 cubic inches, or equivalent size
- Nail-on, round, ceiling box 4 by 1-1/2 inches (plastic or metal)
- Wire nut connectors for 14/2, 14/3
- NM cable, 14/2, 14/3
- NM cable staples, SN 40 and SN 150
- NM cable connectors

ELECTRICAL CONSTRUCTION TECHNOLOGY - PILOT (4230) - (continued)

JOB 4: SMOKE DETECTOR INSTALLATION (1 hour)

- One-15-amp single pole breaker
- Two smoke detectors (hard wired)
- Two metal octagon 4-inch boxes, 1-1/2 inch deep, 1/2-inch Kos, with side brackets
- MC box connectors
- Anti-short bushings (red heads)
- Wire nuts/connectors
- Ground screws/clips
- MC straps/staples
- MC cable, 14/2 and 14/3 AWG

Power Source:

- Electrical power source – 100-amp, 120/240 single-phase service panel pre-mounted with four 15-amp breakers installed.
- One breaker is to be utilized for each job. If not available, 120-volt power source is suitable.

Safety Equipment:

- Safety glasses
- Gloves
- Appropriate safety clothing
- Work shoes

Tools:

- Electrician's pouch with appropriate trade tools
- Roto-Split
- Hacksaw
- Voltage tester with continuity or multimeter (tester used is the discretion of the proctor)
- Step ladder, 4-foot
- Strap-on vice (optional)
- Optional tools such as cordless drills and screwdrivers are allowed
- 1/2-inch EMT conduit bender
- Conduit reamer

***ELECTRICAL CONSTRUCTION TECHNOLOGY - PILOT (4230) -
(continued)***

Wiring:

- 14/2 and 14/3 MC cable
- 14/2 and 14/3 NM cable

Miscellaneous Supplies:

- Pencils
- Scrap paper
- Assorted screws and fasteners

Wall Frame:

- Plywood or equivalent (4 foot square, mounted to one side of the wall frame)
- Stud wall section – 4 feet wide (4 studs) by 6 feet tall (or larger), one for each participant, prepared by instructor in advance

ELECTRICAL OCCUPATIONS - PILOT (4029)

Power Source:

- A suitable 120-volt 15 amp power source

Tools:

- Electrician's pouch with appropriate trade tools
- Roto-split
- Hacksaw
- Voltage tester with continuity or multimeter (tester used is the discretion of the evaluator)
- Step ladder, if needed
- Optional tools such as cordless drills and screwdrivers are allowed
- 1/2-inch EMT conduit bender
- Conduit reamer
- Torpedo level
- Tape measure
- Tongue and groove pliers (Channel locks)
- Pencils
- Scrap paper

NOTE: Automatic offset makers (one-shots) cannot be used.

Wall Frame:

- Stud wall section – 4 feet wide (4 studs) by 6 feet tall (or larger), one for each participant, prepared by instructor in advance
- Plywood or equivalent (4-foot square, mounted to one side of the wall frame)

Evaluator Materials:

- Receptacle circuit tester
- Tape measure
- Multi-meter
- Level
- Pencil/pen
- Clipboard/paper

ELECTRICAL OCCUPATIONS - PILOT (4029) - (continued)

JOB 1: COMMERCIAL WIRING (90 minutes)

- 1/2-inch EMT conduit, one 10-foot piece
- Two 1/2-inch, 1-hole conduit straps
- Two 1/2-inch conduit fittings
- Two 4-inch by 2-1/8 inch deep square boxes with 1/2-inch KOs
- One 4-inch octagonal box with 1/2-inch KOs
- Suitable work surface (4- by 4-foot plywood)
- Two MC box connectors
- Two 4-inch square mud rings
- One GFCI receptacle
- One single pole switch
- One switch cover
- One GFCI receptacle cover
- One keyless lampholder
- One light bulb
- Two MC straps
- Two ground screws
- Ten mounting/drywall screws
- Assorted wire nuts for multiple 14-gauge conductors

Wiring List:

- 15 feet of 14/2 MC cable
- 15 feet of #14 AWG THHN solid white
- 15 feet of #14 AWG THHN solid black
- 15 feet of #14 AWG THHN solid green

JOB 2: RESIDENTIAL WIRING (90 minutes)

- Two 3-way switches and cover plate
- One 4-way switch and cover plate
- Keyless lampholder
- Light bulb for Type A lamp
- Three plastic, single-gang, nail-on boxes
- Nail-on, round, ceiling box (plastic or metal)
- Wire nut connectors for 14/2, 14/3
- NM cable, 14/2, 14/3
- NM cable staples
- NM cable connectors

FLORICULTURE - PILOT (4349)

JOB 1: PLANT CLASSIFICATION AND IDENTIFICATION (60 minutes)

- 50 plants **or photos of plants**, selected from list on the following pages:
 - 10 annuals
 - 20 cut flowers
 - 15 house plants
 - 5 cut foliage
- Writing utensil (pen or pencil)
- List of plants (in participant's performance book)

List of Plants for Job 1 – by Type

Annuals (choose 10)

Number	Name
2	Ageratum mexicanum cv./Ageratum
12	Begonia x semperflorens-cultorum/Wax Begonia
13	Begonia x tuberhybrida cv./Tuberous Begonia
19	Celosia cristata cv./Cockscomb
27	Cleome speciosa/Spider Flower
29	Coleus x hybridus/Coleus
66	Impatiens hybrid cv./Impatiens
76	Lobelia erinus/Annual Lobelia
77	Lobularia maritima/Sweet Alyssum
87	Nicotiana alata /Flowering Tobacco
90	Pelargonium peltatum cv./Ivy Geranium
	Pelargonium x domesticum cv./Regal Geranium (Lady
91	Washington)
92	Pelargonium x hortorum cv./ (Zonal) Geranium
96	Petunia x hybrida cv./Common Garden Petunia
114	Salvia splendens cv./Salvia
120	Senecio cineraria 'Diamond'/Diamond Dusty Miller
131	Tagetes species cv./Marigold
134	Viola x wittrockiana cv./ (Garden) Pansy
138	Zinnia elegans/Zinnia

FLORICULTURE - PILOT (4349) - (continued)

List of Plants for Job 1 – by Type

Cut Flowers (choose 20)

<i>Number</i>	<i>Name</i>
1	Achillea millefolium/Yarrow
3	Alstromeria aurantiaca/Peruvian Lily
4	Anthrirrhinum majus cv./Snapdragon
5	Anthurium x andraeanum cv./Anthurium, Flamingo Lily
16	Carthamus tinctorius/Safflower
21	Chamelaucium uncinatum/Wax Flower
25	Chrysanthemum x morifolium/Standard Daisy
30	Consolida/Larkspur
34	Delphinium elatum/Delphinium
35	Dianthus caryophyllus/Carnation (standard)
42	Erica sp./Heather
46	Eustoma grandiflorum (Lisianthus)
51	Freesia x hybrida/Freesia
54	Gerbera jamesonii/Gerbera Daisy
56	Gypsophilia elegans/Baby's Breath
58	Helianthus sp./Sunflower
68	Iris x xiphium/Dutch Iris
71	Liatris spicata
72	Lilium sp. Oriental/Hybrid Lily
73	Lilium asiatica/Asiatic Lily
75	Limonium sinuatum/Statice
80	Matthiola incana (Stock)
82	Moluccella laevis/Bells of Ireland
89	Paeonia cv./Peony
107	Rosa sp./Standard Rose
113	Salix sp.
124	Solidago sp.
127	Stephanotis floribunda/Stephanotis
133	Tulipa cv./Tulip
136	Zantedeschia sp./Calla Lily

FLORICULTURE - PILOT (4349) - (continued)

List of Plants for Job 1 – by Type

House Plants (choose 15)

Number	Name
5	Anthurium x andraeanum cv./Anthurium, Flamingo Lily
6	Aphelandra squarrosa cv./Aphelandra, Zebra Plant
8	Araucaria heterophylla/Norfolk Island Pine
9	Asparagus densiflorous 'sprengeri'/Sprengri "Fern"
10	Asparagus setaceus/Asparagus "Fern"
15	Calceolaria crenatiflora cv./Pocketbook Plant
17	Cattleya cv./Cattleya Orchid Hybrid
20	Chamaedorea elegans/Parlor Palm
23	Chlorophytum comosum cv./Spider Plant
26	Cissus rhombifolia "mandaiana"/Grape Ivy
28	Codiaeum variegatum pictum cv./Croton
31	Crassula argentea/Jade Plant
32	Cyclamen x persicum cv./Florist's Cyclamen
33	Cymbidium cv./Cymbidium Orchid
36	Dieffenbachia maculata cv./Spotted Dumbcane
37	Dracaena fragrans 'Massangeana'/Corn Plant Draceana
38	Dracaena marginata/Red Edge Draceana
40	Echinocactus cv./Barrel Cactus
41	Epipremnum aureum cv./Golden Pothos, Devil's Ivy
44	Euphorbia milii splendens/Crown-of-Thorns
45	Euphorbia pulcherrima cv./Poinsettia
47	Exacum affine/German (Persian) Violet
50	Ficus benjamina 'Exotica'/Benjamin Fig
48	Ficus elastica 'Decora'/'Decora' Rubber Plant
49	Ficus pumila/Creeping Rubber Plant
52	Fittonia verschaffeltii/Nerve Plant
53	Gardenia jasminoides 'Fortuniana'/Gardenia
55	Gynura aurantiaca 'Sarmentosa'/'Purple Passion," Velvet Plant
60	Heptapleurum arboricola/Dwarf Schefflera, Dwarf Octopus Tree
61	Hippeastrum hybrid cv./Amaryllis
63	Hoya carnosa/Wax Plant
65	Hydrangea macrophylla/French (Florist's) Hydrangea
69	Justicia brandegeana/Shrimp Plant
70	Kalanchoe x blossfeldiana cv./Kalanchoe
79	Maranta leuconeura kerchoviana/Prayer Plant
84	Monstera deliciosa/Cutleaf "Philodendron"
85	Neoregelia carolinae 'Tricolor'/Bromeliad

FLORICULTURE - PILOT (4349) - (continued)

List of Plants for Job 1 – by Type

House Plants (continued)

Number	Name
86	Nephrolepis exaltata cv./Boston Fern
88	Opuntia tribe cv./Cactus
93	Peperomia argyreia/Watermelon Peperomia
94	Peperomia caperata/Emerald Ripple Peperomia
95	Peperomia obtusifolia "Variegata"/Variegated Peperomia
97	Phalenopsis cv./Phalaenopsis (Butterfly) Orchid
98	Philodendron scandens oxycardium/Heartleaf Philodendron
99	Pilea cadierei/Aluminum Plant
100	Pilea involucrata/Friendship Plant
101	Pilea microphylla/Artillery Plant
102	Pilea nummulariifolia/Creeping Charley
104	Plectranthus mummularis/Swedish Ivy
106	Rhododendron cv./Azalea
111	Saintpaulia ionantha cv./African Violet
115	Sansevieria trifasciata cv./Snake Plant
116	Saxifraga stolonifera/Strawberry Plant
117	Schlumbergera bridgesii/Christmas Cactus
118	Schlumbergera truncata cv./Thanksgiving Cactus, Crab Cactus
121	Senecio x hybridus cv./Florist's Cineraria
122	Sinningia speciosa Fyfiana Group cv./Gloxinia
123	Solanum pseudocapsicum cv./Jerusalem Cherry
125	Spathiphyllum clevelandii/White Anthurium, Peace Lily
129	Sterlitzia reginae/Bird-of-Paradise
130	Syngonium podophyllum/Nephthytis
132	Tolmiea menziesii/Piggyback Plant
137	Zebrina pendula cv./Wandering Jew

Cut Foliage (choose 5)

Number	Name
14	Buxus sp.
18	Cedrus sp/Cedar
43	Eucalyptus polyanthemos/Silver Dollar Eucalyptus
57	Hedera helix cv./English Ivy
103	Pinus strobes
109	Ruhohra adiantiformis/Leather Leaf Fern, Baker Fern
110	Ruscus hypoglossum/Italian Ruscus
112	Salal sp.
135	Xerophyllum sp.

FLORICULTURE - PILOT (4349) - (continued)

JOB 2 – SYMMETRICAL TRIANGLE ARRANGEMENT (45 minutes)

(per participant)

- 9 Standard Carnations
- 5 Daisy or Cushion Poms
- 2 stems Baby's Breath
- 10 stems Leather Leaf
- Container
- Floral Foam-dry (1/3 block)
- Floral shears or floral knife
- Florist knife
- Waterproof dish tape (anchor tape)
- Sink or bowl of water to soak the foam
- Calculator
- Writing utensil (pen or pencil)

JOB 3 – DESIGN A MULTI-FLOWER CORSAGE (25 minutes)

- Several types of flowers, various colors (may be artificial)
- Florist knife
- Florist shears
- Floral tape
- Corsage ribbon in assorted colors
- Wire—assorted sizes
- Wire cutters
- Floral adhesive (pan or floral glue)
- Plastic corsage bag/box
- Corsage pin
- Small amount of foliage, tulle, or artificial leaves
- Chenille stems/pipe cleaners (white or green)

NOTE: Participants may use either floral wire/tape or floral adhesive to secure flowers in Job 3.

FLORICULTURE - PILOT (4349) - (continued)

JOB 4 – CASH REGISTER/SALES (20 minutes)

- Cash register or cash drawer with calculator
- Order pad
- Writing utensil (pen or pencil)
- Paper currency and coins (may be real or “play” money)
- Product price list (in participant’s performance book)
- Individual to serve as customer (not a student)

FLORICULTURE-GREENHOUSE - PILOT (4350)

JOB 1 – IDENTIFY AND CONTROL PESTS (20 minutes)

- Four plant and pest specimens:
 - ✓ Two examples of insect damage and two examples of plant diseases typically found in a greenhouse, from your geographical area
 - ✓ May use clear, color photographs or actual plants
- Hand lens, if using actual plants
- Reference guides for treatment methods
- Identification sheet (provided in Participant books)
- Pencils and paper

FOREST PRODUCTS AND PROCESSING - PILOT (4037)

JOB 1: FELLING NOTCH CUTTING (20 minutes)

- Chain saw
- Safety equipment
- Hard hat
- Ear protection
- Chaps
- Eye protection
- Steel-toed boots
- Proper gloves for the job
- Log to be prepared for cutting (can also use a pole)

JOB 2: IDENTIFY LEAF, BUD, AND BARK SPECIMENS (20 minutes)

- Thirty (30) leaf, bud, and/or bark specimens, or high-quality photos, that are representative of your area
- Local commonly used names may be used (Evaluator key is just an example)
- Pencil

JOB 3: SCALE LOGS (30 minutes)

- Five logs of various diameters, lengths, and defects
- International 1/4" log scale stick
- Cant hook (or Peavey)
- Pencils
- Hand-held calculator

JOB 4: SHARPEN AND ADJUST CHAIN SAW (20 minutes)

- Chain saw 3/8-inch pitch chipper
- Hard hat
- Ear protection
- Chaps
- Eye protection
- Proper gloves for the job
- 7/32-inch circular file and guide
- Combination depth gauge
- Flat file and holder
- Combination wrench

FOREST PRODUCTS AND PROCESSING - PILOT (4037) - (continued)

JOB 5: CALCULATE ACREAGE (35 minutes)

- Open or wooded field or compatible site
- Silva hand-held compass
- Protractor
- 6-inch ruler
- Paper
- Clipboards
- Hand-held calculator
- Pencils

JOB 6: PLOT AND ANALYZE 1/5 ACRE (30 minutes)

- 1/5-acre tape or 100-foot tape
- Flagging or other suitable item
- Diameter tape or Biltmore stick
- Merit Hypsometer
- Standing Tree Volume Table
- Small wood lot (10 to 15 trees; not to exceed 4 varieties, if possible)
- Clipboards
- Worksheet (Provided in each participant's test booklet)
- Hand-held calculator
- Pencils

HORTICULTURE-LANDSCAPING - PILOT (4150)

JOB 1: IDENTIFY AND CONTROL PESTS (20 minutes)

- Four plants: two with examples of insect damage and two with examples of diseases (may use clear, color photographs or actual plants)
- Hand lens, if using actual plants
- Approved pesticide recommendations
- Production manual for horticultural crops
- Identification sheet (provided in participant book)
- Pencils

JOB 2: IDENTIFY EQUIPMENT FEATURES AND RECORD MEASUREMENTS (20 minutes)

- One 4-cycle piece of equipment with appropriate user manual (example: 4-cycle lawn mower)
- Spark plug for 4-cycle piece of equipment that is gapped **WIDER** than manual recommendations
- Spark plug gap gauge
- One 2-cycle piece of equipment with appropriate user manual (example: 2-cycle string trimmer)
- Pencils
- Safety glasses
- 10 Tags or stickers labeled as follows:
 - 2 tags/stickers labeled #1
 - 2 tags/stickers labeled #2
 - 2 tags/stickers labeled #3
 - 2 tags/stickers labeled #4
 - 2 tags/stickers labeled #5

JOB 3: INSTALL A CONTAINER-GROWN PLANT (20 minutes)

- Gloves
- Hose, nozzles, and water supply
- Peat moss or other organic material (bale or bag)
- Three to four 4-feet by 4-feet burlap squares **or** one 12-feet by 12-feet tarp **or** wheelbarrow
- Planting site, pre-worked
- Spades and other manual digging tools
- Selection of living, container-grown (2 to 5 gallon) plants (one per student)
- Soil knife or utility knife to make vertical cuts on root ball if needed
- Safety glasses

HORTICULTURE-LANDSCAPING - PILOT (4150) - (continued)

JOB 4: PRUNE A TREE AND AN EVERGREEN SHRUB (25 minutes)

- Branches – both evergreen and deciduous, to demonstrate pruning practices (enough samples for all test takers)
- Tree, requiring pruning
- Evergreen shrub, requiring pruning
- Gloves
- Hand pruning shears
- Hedge shears
- Lopping shears
- Pruning saw
- Sanitizing products for equipment
- Wrapped wire twist-ons (may use flagging tape instead)
- Safety glasses

JOB 5: STAKE OUT A SITE PLAN: ENTRANCE WALKWAY (40 minutes)

- Ball of string or twine
- Red (3), green (3), and yellow (10) color-coded stakes
- Marker paint
- Hammer or hand sledge
- Measuring tapes (2) 25 foot or larger
- Nails (to hold measuring tape in place)
- Paper and pencil
- Scissors or knife to cut twine
- Container to hold materials
- Turf or tilled area (16-feet by 30-feet)
- 2 by 4 lumber
- Lumber anchor
- Safety glasses

HOSPITALITY MANAGEMENT-FOOD AND BEVERAGE - PILOT (3179)

JOB 1: DEMONSTRATE NAPKIN FOLDING (10 minutes)

- Cotton napkins (3 per participant) – starched or stiff
- Flat surface to fold napkins
- Iron and ironing board (optional)

JOB 2: IDENTIFY EQUIPMENT (15 minutes)

30 identification tags or stickers numbered 1 to 30, placed randomly on equipment items.

- blender
- boning knife
- bread basket
- bud vase
- bus pan
- carafe (beverage)
- charger plate
- china cap
- double boiler
- dry measuring cup
- food scale
- gueridon (serving cart)
- hotel pan (1/2)
- hotel pan (1/6)
- hotel tray (serving tray)
- knife (steel)
- ladle
- liquid measuring cup
- meat mallet/tenderizer
- meat thermometer
- pastry bag
- pepper mill
- perforated steamer pan
- sheet pan (half or full)
- silverware sorter/holder
- table crumber
- tray stand
- water glass
- wire whip
- zester

**HOSPITALITY MANAGEMENT-FOOD AND BEVERAGE - PILOT (3179) -
(continued)**

JOB 3: PERFORM TABLE-SIDE SERVICE (25 minutes)

- guest table
- 2 guest chairs
- wooden bowl
- peppermill/peppercorns
- cheese grater
- service cart
- salad tongs
- small ingredients bowls
- small plates (2)
- romaine lettuce
- olive oil
- sea salt
- lemon (1)
- Dijon mustard
- sugar
- Parmesan cheese
- croutons
- wire whip
- measuring spoons
- measuring cups
- paring knife
- cutting board
- cloth
- sanitary solution
- zester

***HOSPITALITY MANAGEMENT-FOOD AND BEVERAGE - PILOT (3179) -
(continued)***

JOB 4: PREPARE CHICKEN CORDON BLEU (1 hour)

- mallet
- wire whip
- baking dish
- meat thermometer
- toothpicks
- oven (conventional)
- measuring cups and spoons
- cutting board
- sanitary solution
- knife
- plate
- plate for flour
- bowls for bread crumbs
- bowl for egg mixture
- plate for serving
- cloth
- tasting forks
- skinless, boneless chicken breasts (2)
- Swiss cheese
- ham
- bread crumbs
- egg (1)
- flour
- water
- salt and pepper
- speed rack

HOSPITALITY MANAGEMENT-FOOD AND BEVERAGE - PILOT (3179) - (continued)

JOB 5: SERVE GUESTS (40 minutes)

(guests may not be instructors or students in the hospitality program)

- guest table
- guest chairs
- tablecloth
- apron
- coffee pot or carafe
- tea kettle and bags
- beverage tray
- hotel tray
- tray stand
- salad forks (2)
- dinner forks (2)
- dinner knives (2)
- teaspoons (2)
- soup spoons (2)
- cocktail forks (2)
- butter knives (2)
- dessert spoons (2)
- dessert forks (2)
- beverage glasses (2)
- water goblets (2)
- napkins (2)
- centerpiece
- sugar caddy
- salt and pepper shaker
- coffee cup and saucer
- water pitcher
- bread basket
- bread and butter plates (2)
- salad plates (2)
- dinner plates (2)
- charger plates (2)
- dessert plates (2)
- soup cups or bowls (2)
- service plates (2)
- sanitizer solution
- cleaning cloth or paper towels
- guest check book/presenter
- pen (writing utensil)

Items not listed on the materials list provided above are not required. Participant may serve items as a simulation.

JOB 6: PRICING MENU ITEMS (15 minutes)

- nonprogrammable calculator
- writing utensil
- scrap paper

JOB 7: COMPLETE A BANQUET EVENT ORDER FORM (15 minutes)

- nonprogrammable calculator
- writing utensil
- scrap paper

HOSPITALITY MANAGEMENT-LODGING - PILOT (3180)

JOB 1: FOLIO AND FORM COMPLETION (30 minutes)

- Non-programmable calculator
- Pencils or other writing utensils

JOB 2: GUEST RELATIONS ROLE PLAY (45 minutes)

- Evaluator will act as the guest
- Mock key cards (2)
- Mock Hotel Information Sheet
- Non-programmable calculator
- Pencils or other writing utensils

JOB 3: PRICING MENU ITEMS (20 minutes)

- Non-programmable calculator
- Pencils or other writing utensils
- Scrap paper

JOB 4: COMPLETE A BANQUET EVENT ORDER FORM (15 minutes)

- Non-programmable calculator
- Pencils or other writing utensils
- Scrap paper

JOB 5: SET UP CONTINENTAL BREAKFAST BUFFET TABLE (20 minutes)

- 1 large buffet table
- 1 large tablecloth
- 3 water pitchers
- 12 cocktail napkins
- 12 plates
- 12 knives, forks, spoons
- Coffee pots
- Coffee stirrers
- 12 coffee cups
- Decorations (silk flowers, etc.)
- 12 juice glasses
- Hot water containers
- Tongs (for the bagels)
- Continental Breakfast Menu:
 - Orange juice
 - Danishes
 - Bagels (assorted)
 - Coffee and tea
- Condiments
 - Sugar, sweetener, and creamer
 - Cream cheese
 - Butter/margarine
- Small basket for trash

NOTE: If orange juice, Danishes, and bagels are not available, appropriate photos of these items may be used.

INDUSTRIAL ELECTRICITY - PILOT (3050)

JOB 1: TOOLS AND MATERIALS IDENTIFICATION (15 minutes)

- Pencils or other writing utensils.
- Workbench or long shelf for displaying items.
- Provide 15 stickers or tags for numbering items.
- Provide **15 items** of your choice and according to availability in your area from the list below:

- | | |
|---------------------------|--------------------------------|
| ✓ Sta-Kon® pliers | ✓ Reducing washer |
| ✓ Pipe reamer | ✓ Plastic bushing |
| ✓ Hickey | ✓ Insulating grounding bushing |
| ✓ 1/2-inch EMT bender | ✓ Sealight connector |
| ✓ Pipe threader | ✓ Two-screw connector |
| ✓ Knock-out punch | ✓ 4 C.S. 1/2-inch handy box |
| ✓ L.B. fitting | ✓ Greenfield connector |
| ✓ L.R. fitting | ✓ Compression EMT connector |
| ✓ L.L. fitting | ✓ Set screw EMT coupling |
| ✓ T. fitting | ✓ Rigid coupling |
| ✓ F.S. fitting | ✓ 1/2-inch KO handy box |
| ✓ 90-degree pulling elbow | ✓ Oil seal |
| ✓ Chase nipple | ✓ Erickson fitting |
| ✓ Offset nipple | ✓ Kellum grip |
| ✓ Close nipple | ✓ Snap-in blank |
| | ✓ One-hole strap |

INDUSTRIAL ELECTRICITY - PILOT (3050) - (continued)

JOB 2: WIRING A MOTOR STARTER (1 hour and 40 minutes)

NOTE: These steps **MUST** be accomplished **PRIOR** to test administration.

1. The physical layout can be done on a 4-foot by 4-foot or larger plywood board. There are no minimum or maximum distances to be set up.
2. Construct, according to local codes, the layout to be used by the participant. Refer to the diagrams on the following page and install the following:
 - Disconnect
 - Transformer enclosure and transformer
 - Motor starter and enclosure
 - Start/stop station
 - Motor
3. Suggested equipment and materials to be provided for this job are:
 - 480V or 208V, 30a, 3 Ø disconnect, fusible (any brand)
 - 1/2-inch EMT conduit
 - 14-inch by 12-inch junction box (or equivalent)
 - 50 VA control transformer, dual or single voltage, 480V or 208V/120V (with control fuse)

 - Allen Bradley starter, size 00 with 120V coil (or equivalent)
 - Miscellaneous fittings
 - Start/stop station with pilot light (any brand)
 - Wire numbers
 - 9-lead, 3 Ø motor, 480/240 fractional hp (any brand)
 - #12 wire (black, red, white, green)
 - Assorted sizes of wire (to provide selection opportunity for participants)
 - Wire connectors, assorted types (Sta-Kon®, wire nuts, tape, etc.)
 - Fuses, both line and control: 15-20-30a
 - 1/2-inch Liquitite® flexible conduit
 - Miscellaneous hand tools, as required (your choice)
 - Overload heaters of proper size for the motor

NOTE: Equipment and materials listed for Job 2 are **suggestions only**. You may make any reasonable substitutions, as necessary.

INDUSTRIAL ELECTRICITY - PILOT (3050) - (continued)

JOB 2: WIRING A MOTOR STARTER

Physical Layout

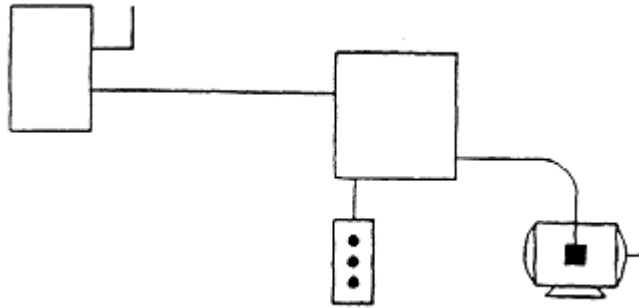
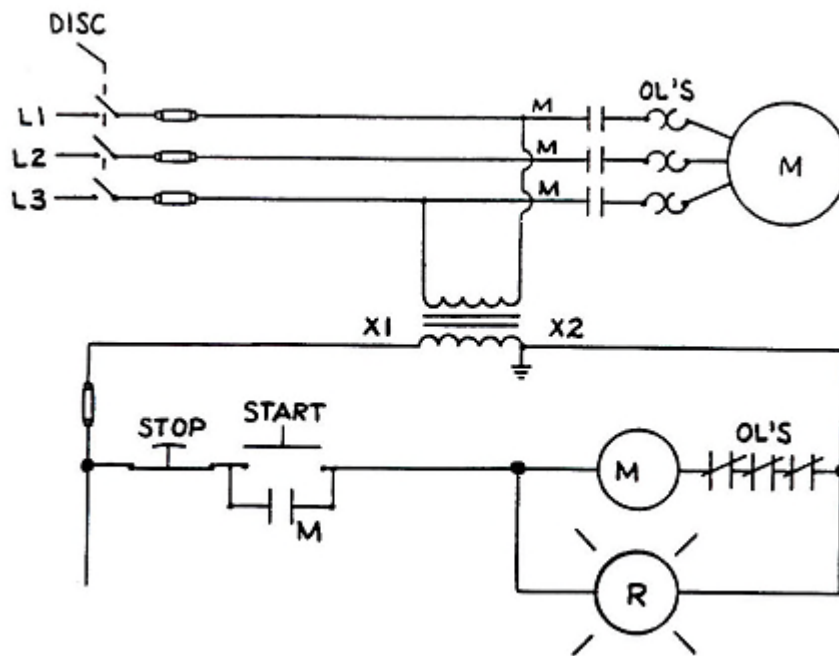


Diagram for Job 2



INDUSTRIAL ELECTRICITY - PILOT (3050) - (continued)

JOB 3: BENDING ELECTRICAL METALLIC TUBING (EMT) (30 minutes)

- 10-foot piece of ½-inch EMT (per participant)
- 1/2-inch EMT bender or ½-inch Chicago bender
- Torpedo level
- Small conduit vise
- Hacksaw
- Lineman's pliers
- Tape measure
- Pencil

JOB 4: REPLACING BALLASTS ON A FLUORESCENT FIXTURE (30 minutes)

- 4-foot, 4 lamp, 120V fluorescent fixture
- AC line cord
- 2 electronic ballasts for fixture (with screws and ground screw)
- 4 good lamps for fixture
- Assorted wire nuts
- 2-screw connector

NOTE: Fixture may be set on a workbench or mounted, with access to an electrical outlet. If fixture is suspended from the ceiling, a ladder should be provided, if appropriate.

INDUSTRIAL MAINTENANCE MECHANICS - PILOT (3074)

JOB 1: CONNECT AND OPERATE A CIRCUIT (50 minutes)

- All necessary protective clothing and safety equipment
- Air pressure source for pneumatic
- Electric supply source 24 VDC regulated power source (minimum 5 amps DC supply)
- 1 – push button switch
- 1 – double-acting single throw selector switch (toggle switch) with a “bat” handle
- 2 – metal mounting boxes for above switches
- 2 – limit switches
- 3/8-inch air line, 8 feet
- 1 – 24 VDC control relay with 2 N.O. contacts
- Green and red indicator lamps (24 VDC) with holders (sockets) with screw terminals
- Phillips screwdriver
- Flat head screwdriver
- Utility knife
- 10 – 3/8-inch air line hose clamps
- 2 – flow control valves (full-flow one-way)
- 10 – 3/8-inch threaded barbed hose fittings
- 1 – double-acting pneumatic cylinder (1 inch by 6 inch) with 3/8-inch threaded ports
- 2/4 directional control valve (DCV) with one solenoid with 24-volt DC coil
- 20 feet – blue 16-gauge multi-strand wire (THHN) (+DC)
- 20 feet – white with blue stripe 16-gauge multi-strand wire (THHN) (-DC)
- 2 – wire nuts appropriate for 16-gauge wire
- Plywood sheet (2 feet by 2 feet)
- 30 – #8 wood screws (1/2 inch long)
- Non-programmable calculator
- Clock or timer

INDUSTRIAL MAINTENANCE MECHANICS - PILOT (3074) - (continued)

JOB 2: ASSEMBLE A MULTIPLE SHAFT GEAR DRIVE SYSTEM (1 hour and 20 minutes)

- All necessary protective clothing and safety equipment
- Lock-out/tag-out device
- Workbench (or adequately sized workstation)
- 1/2 horsepower variable speed electric motor, 110 volts
- Flexible coupling appropriate size for motor and shaft
- Clamp-on ammeter
- 8 – pillow block bearings, 5/8-inch
- Aluminum spacers
- 2 – shafts, cold rolled, 5/8 inch diameter by 12 inch length (keyed for .185 key stock)
- 2 – shafts, cold rolled, 5/8 inch diameter by 8 inch length (keyed for .185 key stock)
- 2 – spur gears, 12 diametrial pitch (DP) with 36 teeth
- 1 – spur gear, 12 diametrial pitch (DP) with 48 teeth
- 1 – spur gear, 12 diametrial pitch (DP) with 24 teeth
- Key stock, 2 feet, .185 inch
- 1 – prony brake
- Bed plate (3 feet by 4 feet by 1/4 inch) – aluminum plate (slotted to 3/8 inch per print)
- 10 nuts and bolts – 5/16 inch – 18 UNC–2A by 2-1/2 inch
- 20 nuts and bolts – 5/16 inch – 18 UNC-2A by 4-1/2 inch
- 60 flat washers – 5/16 inch
- 30 lock washers – 5/16 inch
- 2 – wrenches – 1/2 inch
- Hex key, standard set
- Socket set, 3/8-inch drive
- 1 rubber mallet
- Punch #3
- 1 – ball peen hammer – 22 ounce
- 1 – dial indicator with magnetic base
- Power source, 110 volt
- Feeler gauge set
- 10 – shims, sheet metal (.005)
- 10 – shims, sheet metal (.010)
- Straight edge rule, 24 inch
- Grease gun – filled
- Level, 3 inch
- Pencils/paper
- Non-programmable calculator
- Clock or timer

INDUSTRIAL MAINTENANCE MECHANICS - PILOT (3074) - (continued)

JOB 3: READ AND INTERPRET AN INDUSTRIAL BLUEPRINT (20 minutes)

- Pencils
- Blueprint and worksheet (provided in Performance Assessment booklet)
- Clock or timer

JOB 4: TROUBLESHOOT AN ELECTRICAL CONTROL SYSTEM (30 minutes)

- All necessary protective clothing and safety equipment
- Grounded workbench (or adequately sized workstation)
- Rubber mat to stand on
- Electric motor, 3-phase Y-connected (with a blown fuse from Line 1 to H1 on transformer)
- Multimeter
- Fuse (working) appropriate size for motor
- Switch (working) appropriate size for motor
- Starter relay (working) 3-phase, appropriate size for motor
- Phillips screwdriver
- Flat head screwdriver
- Fuse pullers (appropriate sizes for each size fuse)
- Non-programmable calculator
- Clock or timer

MANUFACTURING TECHNOLOGY - PILOT (3084)

JOB 1: MILLING OPERATIONS (1 hour and 30 minutes)

- All necessary protective clothing and safety equipment
- Lock-out/tag-out device
- Workbench (or adequately sized workstation)
- 1/2 horsepower variable speed electric motor, 110 volts
- Flexible coupling appropriate size for motor and shaft
- Clamp-on ammeter
- 8 – pillow block bearings, 5/8-inch
- Aluminum spacers
- 2 – shafts, cold rolled, 5/8 inch diameter by 12 inch length (keyed for .185 key stock)
- 2 – shafts, cold rolled, 5/8 inch diameter by 8 inch length (keyed for .185 key stock)
- 2 – spur gears, 12 diametrial pitch (DP) with 36 teeth
- 1 – spur gear, 12 diametrial pitch (DP) with 48 teeth
- 1 – spur gear, 12 diametrial pitch (DP) with 24 teeth
- Key stock, 2 feet, .185 inch
- 1 – prony brake
- Bed plate (3 feet by 4 feet by 1/4 inch) – aluminum plate (slotted to 3/8 inch per print)
- 10 nuts and bolts – 5/16 inch – 18 UNC–2A by 2-1/2 inch
- 20 nuts and bolts – 5/16 inch – 18 UNC-2A by 4-1/2 inch
- 60 flat washers – 5/16 inch
- 30 lock washers – 5/16 inch
- 2 – wrenches – 1/2 inch
- Hex key, standard set
- Socket set, 3/8-inch drive
- 1 rubber mallet
- Punch #3
- 1 – ball peen hammer – 22 ounce
- 1 – dial indicator with magnetic base
- Power source, 110 volt
- Feeler gauge set
- 10 – shims, sheet metal (.005)
- 10 – shims, sheet metal (.010)
- Straight edge rule, 24 inch
- Grease gun – filled
- Level, 3 inch
- Pencils/paper
- Non-programmable calculator
- Clock or timer

MANUFACTURING TECHNOLOGY - PILOT (3084) - (continued)

JOB 2: ASSEMBLE A MULTIPLE SHAFT GEAR DRIVE SYSTEM **(1 hour and 20 minutes)**

- All necessary protective clothing and safety equipment
- Lockout/tagout device
- Workbench (or adequately sized workstation)
- 1/2-horsepower variable speed electric motor, 110 volts
- Flexible coupling appropriate size for motor and shaft
- Clamp-on ammeter
- 8 – Pillow block bearings, 5/8-inch
- Aluminum spacers
- 2 – shafts, cold rolled, 5/8-inch diameter by 12-inch length (keyed for .185 key stock)
- 2 – shafts, cold rolled, 5/8-inch diameter by 8-inch length (keyed for .185 key stock)
- 2 – spur gears, 12 diametrical pitch (DP) with 36 teeth
- 1 – spur gear, 12 diametrical pitch (DP) with 48 teeth
- 1 – spur gear, 12 diametrical pitch (DP) with 24 teeth
- Key stock, 2 feet, .185 inch
- 1 – prony brake
- Bed plate (3 feet by 4 feet by 1/4-inch) – aluminum plate (slotted to 3/8-inch per print)
- 10 nuts and bolts – 5/16-inch – 18 UNC – 2A by 2 1/2-inch
- 20 nuts and bolts – 5/16-inch – 18 UNC – 2A by 4 1/2-inch
- 60 flat washers – 5/16-inch
- 30 lock washers – 5/16-inch
- 2 – wrenches – 1/2-inch
- Hex key, standard set
- Socket set, 3/8 inch drive
- 1 rubber mallet
- Punch #3
- 1 – ball peen hammer – 22 ounce
- 1 – dial indicator with magnetic base
- Power source, 110 volt
- Feeler gauge set
- 10 – shims, sheet metal (0.005)
- 10 – shims, sheet metal (0.010)
- Straight edge rule, 24-inch
- Grease gun – filled
- Level, 3-inch
- Pencils/paper
- Non-programmable calculator
- Clock or timer

MANUFACTURING TECHNOLOGY - PILOT (3084) - (continued)

JOB 3: DETERMINING GAUGE BLOCK COMBINATIONS (20 minutes)

- One complete set of standard 81-piece gauge Blocks
- Height gauge
- Granite surface plate
- Machinery's Handbook (current) or abbreviated version
- Pencils/paper
- Non-programmable calculator
- Clock or timer
- Lint free cloth

MEDICAL ASSISTING - PILOT (4555)

NOTE: A sufficient number of volunteers should be recruited as “clients” for this assessment. NOCTI strongly recommends that **non-student** volunteers serve as human subjects for this assessment. However, in the event that this is not feasible and student volunteers are used, NOCTI **requires** that the students used are **NOT** part of the program being tested or of a similar program. Teachers may **not** serve as volunteers. **Mannequins may be substituted for volunteers, if feasible.**

JOB 1: HAND WASHING (5 minutes)

- Sink with hot and cold running water
- Liquid antibacterial soap
- Paper towels
- Waste container
- Watch or clock with second hand

JOB 2: POSITIONING (10 minutes)

- Laboratory area
- Adjustable exam table or bed
- Volunteer patient for each participant (not a student in the health science program) or mannequin
- Hand sanitizer

JOB 3: MANUAL BLOOD PRESSURE AND PULSE MEASUREMENT (10 minutes)

- Laboratory area
- Seat for the patient with arm rest or table
- Volunteer patient for each participant (not a student in the health science program)
- Dual head stethoscope for participants and evaluators
- Charting form for blood pressure and pulse (in participant's booklet)
- Hand sanitizer
- Alcohol pads
- Pen
- Watch or clock with second hand
- Sphygmomanometer with assorted cuff sizes

JOB 4: ELECTROCARDIOGRAM (25 minutes)

- Laboratory area equipped with properly functioning electrocardiograph machine
- Conductive pads or electrode gel or cream (whichever is routinely used in the classroom laboratory)
- Volunteer patient for each participant (not a student in the health science program)
- Hand sanitizer
- Exam table or bed
- Pillow

MEDICAL ASSISTING - PILOT (4555) - (continued)

JOB 4: ELECTROCARDIOGRAM (25 minutes) - (continued)

- Towels (for covering pillow)
- Towels or tissues (for cleansing patient after tracing)
- Waste receptacle
- Spare EKG paper roll
- Disposable drape or sheet
- Alcohol wipes
- Pen or pencil
- Disposable razor at each machine for simulated shaving if needed

JOB 5: VISUAL ACUITY SCREENING (10 minutes)

- Tape measure
- Masking tape to mark 20 feet position
- Volunteer patient (not a student in the health science program)
- Snellen chart, hung at proper height
- Occluders (that may be cleaned or are disposable)
- Pointer or ruler
- Hand sanitizer
- Alcohol wipes
- Pen or pencil
- Visual Acuity Results Form (in participant booklet)

JOB 6: LAB REQUISITION FORM (10 minutes)

- Nonsterile gloves
- Hand sanitizer
- Throat culture swab (collected) or simulation
- Pen or fine tip permanent marker
- Specimen label (in participant booklet)
- Laboratory Service Requisition form (in participant booklet)
- Clear biohazard lab specimen bag with pocket for requisition
- Receptacle labeled "Outgoing lab orders"
- Trash can

JOB 7: APPLYING AND REMOVING STERILE GLOVES (10 minutes)

- Sterile gloves (one pair per participant) in a variety of sizes
- Flat surface
- Biohazard bag

NURSING ASSISTING - PILOT (4358)

NOTE: Sufficient volunteers should be recruited as “clients” for this assessment. NOCTI strongly recommends that **adult** volunteers serve as human subjects for this assessment. However, in the event that this is not feasible and student volunteers are used, NOCTI **requires** that the students used are **NOT** part of the program being tested or of a similar program. Teachers may **not** serve as volunteers. **Mannequins may be substituted for volunteers, if feasible.**

NOTE: Participants will be required to demonstrate the complete handwashing technique upon beginning Procedure 1. Participants will only be required to *verbally indicate the need to perform hand hygiene* at the appropriate times during the remainder of all other procedures. Participants should wash hands as needed for infection control purposes (accidental contamination).

PROCEDURE 1: APPLY AND REMOVE PERSONAL PROTECTIVE EQUIPMENT (PPE)

(15 minutes)

- Gown
- Mask
- Gloves
- Soiled linen container (if using cloth gowns only)
- Waste container
- Hand soap
- Sink
- Paper towels

PROCEDURE 2: OBTAIN AND RECORD STANDARD VITAL SIGNS (10 minutes)

- Volunteer to serve as patient (not a student in health science program)
- Identification bracelet for patient (with name and DOB)
- Watch with second hand
- Oral thermometer, electronic or manual
- Accessories for thermometer as needed
- Sphygmomanometer (manual)
- Dual-head stethoscope
- Gloves
- Tissues
- Waste container
- Pen
- Alcohol swabs
- Hand sanitizer

NURSING ASSISTING - PILOT (4358) - (continued)

PROCEDURE 3: DEMONSTRATE WHEELCHAIR ASSISTANCE (10 minutes)

- Patient with simulated left side hemiplegia (not a student in health science program)
- Identification bracelet for patient (with name and DOB)
- Hospital bed
- Call bell
- Care plan/orders that states that patient can get OOB to wheelchair
- Transfer belt or gait belt
- Wheelchair with foot pedals
- Lap robe, sheet, or blanket
- Non-skid slippers or shoes
- Waste container

PROCEDURE 4: PERFORM A MODIFIED BED BATH (20 minutes)

- Mannequin or patient with gown (not a student in health science program)
- Identification bracelet for patient (with name and DOB)
- Hospital bed
- Bedside table with barrier
- Call bell
- Gloves (optional use)
- Waste container
- Laundry hamper
- Bath blanket
- Linens
- Towels
- Washcloths
- Soap
- Basin
- Clean gown
- Paper towels
- Sink

PRE-ENGINEERING/ENGINEERING TECHNOLOGY - PILOT (3475)

JOB 1: BUILD A SIMPLE CIRCUIT (1 hour)

- Breadboard
- Solid core wire, (#20-22 AWG) 6-8 feet per participant
- Multimeter
- Wire strippers
- Wire cutters
- Potentiometer (5 k Ω)
- Test leads, one pair
- 9-volt power source
- 5 different resistors with a variety of values
- SPST switch – one per participant
- Lamp – 1.5 volt flashlight lamp
- Lamp holder to accommodate lamp
- Schematic diagram (*supplied in participant's booklet*)
- Paper
- Pencil

JOB 2: PREPARE A TECHNICAL REPORT (1 hour and 30 minutes)

- Computer with word processing software
- Graph paper
- Printer
- Pencil

JOB 3: PREPARE A PRESENTATION (30 minutes)

- Computer with graphics and presentation software (i.e., PowerPoint)
- Appropriate power supply and cables
- Printer

PRODUCTION AGRICULTURE - PILOT (3163)

JOB 1: VEHICLE MAINTENANCE (30 minutes)

- Vehicle with non-diesel engine (your choice) with **Make** and **Model Number** visible

Prior to test: *Deflate some air from the right front tire*
 Adjust engine oil so it will read low
 Establish coolant level for a cool engine reading
 *Insert information in the **Evaluator Answer Key** below*

- Tire pressure gauge
- Waste rags or cloths
- Pencils

JOB 1 – Evaluator Answer Key

VEHICLE MAINTENANCE WORKSHEET

Vehicle Make _____ Model _____

Is oil needed? ____ yes ____ no

Fuel Gauge Reading:

Recommended Tire Inflation: _____ psi Front Right Tire Inflation: _____ psi

Is engine coolant needed? ____yes ____no

JOB 2: CALCULATE NET WORTH (30 minutes)

- Pencil
- Scrap paper
- Non-programmable calculator

JOB 3: DETERMINE GENOTYPES AND PHENOTYPES (30 minutes)

- Pencil
- Scrap paper

PRODUCTION AGRICULTURE - PILOT (3163) - (continued)

JOB 4: SOIL TEST INTERPRETATION (30 minutes)

- Pencil
- Scrap paper
- Non-programmable calculator

JOB 5: ADMINISTER AN INJECTION (50 minutes)

- Medicine bottle filled with injectable saline (or other liquid)
- 3 syringes (3cc, 6cc, 12cc)
- 3 needles of three different sizes:
 - 18 gauge 1-inch (pea green cover)
 - 20 gauge 1-1/2 inch (pink cover)
 - 1/2-inch long needle of any gauge
- Sharps container
- Alcohol swabs
- Injection “subject” (See **Note** below)
- Pencil
- Scrap paper
- Non-programmable calculator

Note: The use of live animals as injection subjects is NOT encouraged! We recommend using a stuffed animal (cow or steer), but an orange or other appropriate “subject” may be used.

TECHNICAL DRAFTING - PILOT (4154)

JOB 1: VISUALIZATION (45 minutes)

JOB 2: ORTHOGRAPHIC DRAWING (45 minutes)

JOB 3: DEVELOPMENT (30 minutes)

JOB 4: ASSEMBLY – BILL OF MATERIALS (15 minutes)

MANUAL

- Drawing paper
- Isometric grid paper
- Orthographic grid paper
- Scratch paper
- 30° - 60° triangle
- 45° - 90° triangle
- Brush
- Calculator
- Circle template
- Compass
- Drafting machine or parallel bar
- Drafting tape
- Eraser
- Erasing shield
- Machinery's Handbook (or equal)
- Pencils: 4H, 2H, H, and HB
- Scale
- Workstation

CAD

- CAD software and documentation
- Compatible printer/plotter with paper
- Isometric grid paper
- Orthographic grid paper
- Scratch paper
- Storage device (CDs or flash drive) if applicable
- Machinery's Handbook (or equal)
- CAD workstation