



Including some assessment  
everyday.



# Requirements

- Theory of operation (classroom)
- Specialized Lab Skills (NATEF Tasks – up to 450 prioritized by industry needs)
- Employability skills (general & incorporated with individual tasks)

# Example NATEF Task List

## Automotive Heating & A/C



## **A. A/C System Diagnosis and Repair (50 total tasks)**

- |    |  |     |
|----|--|-----|
| 1. | Complete work order to include customer information, vehicle identifying information, customer concern, related service history, cause, and correction.                                    | P-1 |
| 2. | Identify and interpret heating and air conditioning concern; determine necessary action.   | P-1 |
| 3. | Research applicable vehicle and service information, such as heating and air conditioning system operation, vehicle service history, service precautions, and technical service bulletins. | P-1 |
| 4. | Locate and interpret vehicle and major component identification numbers (VIN, vehicle certification labels, calibration decals).   | P-1 |
| 5. | Performance test A/C system; diagnose A/C system malfunctions using principles of refrigeration.   | P-1 |

# Example – Student Lab Sheet

PERFORMANCE TEST AN A/C SYSTEM (GENERIC)  
(ASE TASK A5 & A7, P-1)

Instructor's OK \_\_\_\_\_

Name \_\_\_\_\_

1. Install a gauge set (manifold gauge set or use one of the recovery/recycle machines).
2. If necessary, place a fan in front of the condenser to prevent overheating of the cooling system.
3. Install a thermometer in one of the center A/C ducts, turn the A/C on "MAX" and set the blower speed to high.
4. Start the engine and operate at a speed of 1500 – 2000 RPM.
5. Operate the system for several minutes until it the gauge pressures have stabilized.
6. Record the **average** (if the pressure varied in a range of 10-20 PSI, the average would be 15 PSI) low side gauge reading \_\_\_\_\_ (should be approx. 20-30 PSI)
7. Record the high side gauge reading \_\_\_\_\_ (should be approx. 160-200 PSI)
8. Record the center air duct temperature \_\_\_\_\_ (should be approx. 40-50 deg.

# Managing this can be a “Monster”



How I assess some aspects every lab session.

# From Syllabus

## LAB GRADE POINTS CALCULATION

At the end of the semester grading interval your lab performance will be the sum of the daily points you earned and will be assigned as follows:

- **Productivity** – 100 points possible
- **Demonstrated application of knowledge and use of equipment/tools** – 100 points possible
- **Workmanship quality and professionalism** – 100 points possible.
- **Completion of lab activities** (lab projects/repair orders) - 100 possible points
- **Adherence to lab policies, procedures** and clean up participation – 50 points possible.
- **Overall progress** in learning diagnostic and repair skills – 50 points possible.



# Example – Task Record

(Each student has a copy, updated every lab)

TASK	LM Page	INSTRUCTOR VERIFICATION & COMPLETION DATE					NOTES
A/C component ID X2	7						
Manifold gauge usage x3	9						
A/C performance tests	12						

Incorporated in lab portion of grade at mid-term and end of semester.

# Sample – Rating Scale (Rubric)

(adapted from syllabus)

<b><u>Outstanding (7 points)</u></b>	<b><u>Very Good (6 points)</u></b>	<b><u>Satisfactory (5 points)</u></b>	<b><u>Needs improvement (4 points)</u></b>	<b><u>Unsatisfactory (1-3 points)</u></b>
student exhibits entry level knowledge, skills and productivity. (applies critical thinking abilities and maximizes productivity to accomplish learning activities/projects with in industry time expectations. Little, if any instructor assistance is needed.)	student exhibits entry level knowledge and skills. (is developing in the use of critical thinking abilities and is productive and able to accomplish tasks slightly over industry time expectations. Some instructor assistance is needed on each project.)	student exhibits levels of knowledge and skills that are approaching entry level. (requires some “coaching” to apply critical thinking abilities, productivity is 1.5 times less than the industry standard. Frequent instructor assistance is needed on each project.	knowledge and skills are below entry level, critical thinking skills are starting to develop; productivity is 2 times less than the industry standard. Constant instructor assistance is necessary to complete each project.	knowledge, skills and critical thinking abilities are minimal and productivity is well less than 2 times the industry standard. Student is not able to complete projects or task without constant instructor supervision and input.

My main “tool” (simple, durable, very portable.)



The image shows the back of the iPod touch in the same black leather case with yellow stitching. The screen displays the Numbers spreadsheet app. A red arrow points to the text "From point Values." above the spreadsheet.

From point Values.

	week 13	week 14	total	final
3 Ackerly, Ricky	3	2	35	
6 Productivity	6	5	78	
6 Application/Equip.	6	6	76	
5 Workmanship	3	5	73	
2 Rules/clean	3	3	40.5	
0 Bevilacaqua, J	2	2	35	
4 Productivity	5	5	73	
4 Application/Equip.	5	6	77	
4 Workmanship	5	6	75	
2 Rules/clean	3	3	41	
3 Bianchi, Phil	3	3	42	
6 Productivity	6	7	84	
6 Application/Equip.	5	7	84	
6 Workmanship	4	5	81	
3 Rules/clean	3	3	42	
3 Browne, Kevin	3	3	42	
6 Productivity	6	7	84	
6 Application/Equip.	6	6	84	
6 Workmanship	4	6	82	
3 Rules/clean	3	3	42	
2 Karunaratne, Y	0	3	36	

[iTunes](#)

# Closing Thoughts

- Make daily assessment a part of your lab.
- Monitor results and “close the loop”.
- Make necessary adjustments (lessons, teaching, assessment system).



Questions??