

Including some assessment everyday.



- 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)

nstructor's OK	Name
 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 cosystem.	ndenser to prevent overheating of the cooling
3. Install a thermometer in one of the centerlower speed to high.	er A/C ducts, turn the A/C on "MAX" and set the
4. Start the engine and operate at a speed of	of 1500 – 2000 RPM.
5. Operate the system for several minutes u	intil it the gauge pressures have stabilized.
6. Record the <u>average</u> (if the pressure varied PSI) low side gauge reading	d in a range of 10-20 PSI, the average would be 15 _ (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
- <u>Demonstrated application of knowledge and use of equipment/tools</u> 100 points possible
- Workmanship quality and professionalism 100 points possible.
- <u>Completion of lab activities</u> (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	INSTRU	CTOR VERI	FICATION 8	& COMPLET	TION DATE	NOTES
A/C component ID X2	7						
Manifold gauge usage x3	9						
A/C performance tests	12						

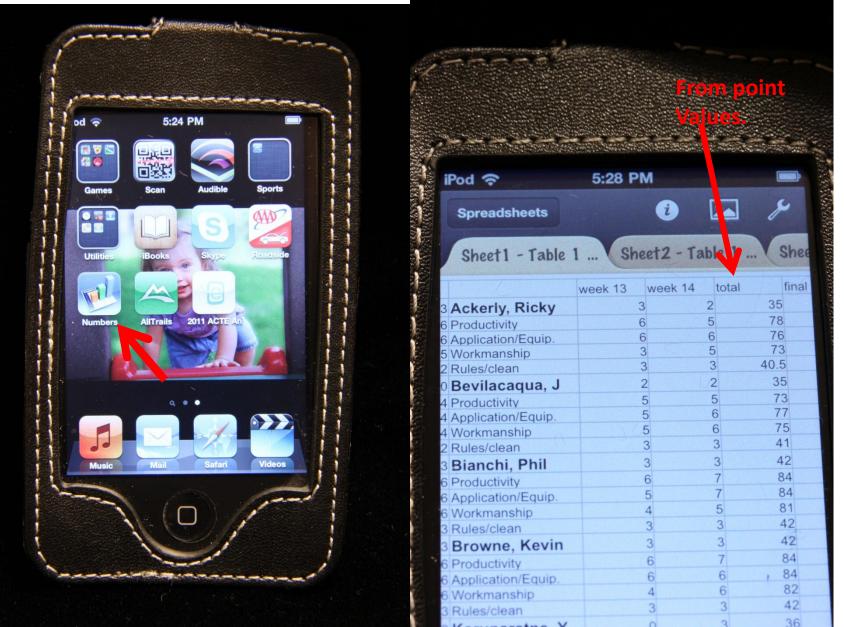
Incorporated in lab portion of grade at mid-term and end of semester.

Sample – Rating Scale (Rubric)

(adapted from syllabus)

Outstanding (7 points)	Very Good (6 points)	Satisfactory (5 points)	Needs improvement (4 points)	<u>Unsatisfactory</u> (1-3 points)
student exhibits entry level knowledge, skills and productivity. (applies critical thinking abilities and maximizes productivity to accomplish learning activities/project s 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.)



Closing Thoughts

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



Questions??