INDT 100 Lesson 3

Week #: _2 Lesson 3_   **Subject:** _Units_   **Prepared By:** _Zack Jacobson_

Overview	Purpose
Manipulation of units used in Aerospace industry. Unit conversions New units	

		Teacher's or other reference	
Objectives Skills/information that will be learned.	Recognize Common units. Identify the quantity associated with each unit. Know where to find information on unfamiliar units		**Materials Needed** • BCT
Information (Give and/or demonstrate necessary information)	Common quantities that we have units for: Time, temp, Pressure, Distance, Area, Volume, Flow-rate, Velocity, Angle, Light, Noise, Pain, Electrical potential, Electrical Flow, Resistance, Clarity, Power, Work All the units that apply to the above: Special units for Aeronautics: See Below	http://www.mathworks.com/help/toolbox/aerotbx/ug/bqsgkx5-1.html Discuss the Mars Rover debacle…	
Verification (Steps to check for student understanding)	Throw-out some physical situations and ask how to measure them.		**Other Resources**
Activity (Describe the independent activity to reinforce this lesson)	Use the "antique" aircraft instrumentation and see exactly what they are and what units they are displayed in. Possibly build a lab or trainer board where these can be used for training.	For teacher: Consider making a list to hand-out of common units and what they are for. Possible "normal" values for each unit?	
Summary	Quantities and units are part of our communications. Very important.		**Additional Notes**

Acceleration	meters/second^2 (m/s^2), kilometers/second^2 (km/s^2), (kilometers/hour)/second (km/h-s), g-unit (g)	inches/second^2 (in/s^2), feet/second^2 (ft/s^2), (miles/hour)/second (mph/s), g-unit (g)
Angle	radian (rad), degree (deg), revolution	radian (rad), degree (deg), revolution
Angular acceleration	radians/second^2 (rad/s^2), degrees/second^2 (deg/s^2)	radians/second^2 (rad/s^2), degrees/second^2 (deg/s^2)
Angular velocity	radians/second (rad/s), degrees/second (deg/s), revolutions/minute (rpm), revolutions/second (rps)	radians/second (rad/s), degrees/second (deg/s), revolutions/minute (rpm), revolutions/second (rps)
Density	kilogram/meter^3 (kg/m^3)	pound mass/foot^3 (lbm/ft^3), slug/foot^3 (slug/ft^3), pound mass/inch^3 (lbm/in^3)
Force	newton (N)	pound (lb)
Inertia	kilogram-meter^2 (kg-m^2)	slug-foot^2 (slug-ft^2)
Length	meter (m)	inch (in), foot (ft), mile (mi), nautical mile (nm)
Mass	kilogram (kg)	slug (slug), pound mass (lbm)
Pressure	pascal (Pa)	pound/inch^2 (psi), pound/foot^2 (psf), atmosphere (atm)
Temperature	kelvin (K), degrees Celsius (^{o}C)	degrees Fahrenheit (^{o}F), degrees Rankine (^{o}R)

Torque	newton-meter (N-m)	pound-feet (lb-ft)
Velocity	meters/second (m/s), kilometers/second (km/s), kilometers/hour (km/h)	inches/second (in/sec), feet/second (ft/sec), feet/minute (ft/min), miles/hour (mph), knots