

# TFES Lab (ME EN 4650)

## Airfoil Aerodynamics Lab: Raw Data Sheet

$T_{atm}$  :  (°C)  
 $P_{atm}$  :  (mm Hg)  
 Fan:  (Hz)

Freestream Conditions*	
(Pitot-static tube upstream of airfoil)	
Freestream Velocity	
$P_{total}$ : Pitot-static probe (TOTAL)	
$P_{static}$ : Pitot-static probe (STATIC)	
$P_{output} = \frac{1}{2} \rho U_{\infty}^2$	
$P_{output}$ :	<input type="text"/> (in H <sub>2</sub> O)

\*set pressure select knob to CH: 0

\*set Pitot-static probe to x=1.5", y=9.5"

\*set airfoil at  $\alpha=0^\circ$

Lift and Drag	
(pivoting airfoil attached to lift/drag balance)	
$\alpha$ (deg)	Data Filename*
0	<input type="text"/>
1	<input type="text"/>
2	<input type="text"/>
3	<input type="text"/>
4	<input type="text"/>
5	<input type="text"/>
6	<input type="text"/>
7	<input type="text"/>
8	<input type="text"/>
9	<input type="text"/>
10	<input type="text"/>
11	<input type="text"/>
12	<input type="text"/>
13	<input type="text"/>
14	<input type="text"/>
15	<input type="text"/>
16	<input type="text"/>

\*data are output in units of kg

\*data file: 1st column=LIFT, 2nd column=DRAG

Airfoil Pressure Distrubtion			
(airfoil plug with pressure taps along surface)			
$P_{total}$ : Airfoil pressure taps			
$P_{static}$ : Pitot-static probe (STATIC)			
$P_{output} = P_x - P_{\infty}$			
Before stall: $\alpha =$ <input type="text"/> (deg)			
$x/c$	Pressure Channel	$P_{output}$ (in H <sub>2</sub> O)	
		Top Surface	Bottom Surface
0.05	1	<input type="text"/>	<input type="text"/>
0.1	2	<input type="text"/>	<input type="text"/>
0.2	3	<input type="text"/>	<input type="text"/>
0.3	4	<input type="text"/>	<input type="text"/>
0.4	5	<input type="text"/>	<input type="text"/>
0.5	6	<input type="text"/>	<input type="text"/>
0.6	7	<input type="text"/>	<input type="text"/>
0.7	8	<input type="text"/>	<input type="text"/>
0.8	9	<input type="text"/>	<input type="text"/>
After stall: $\alpha =$ <input type="text"/> (deg)			
$x/c$	Pressure Channel	$P_{output}$ (in H <sub>2</sub> O)	
		Top Surface	Bottom Surface
0.05	1	<input type="text"/>	<input type="text"/>
0.1	2	<input type="text"/>	<input type="text"/>
0.2	3	<input type="text"/>	<input type="text"/>
0.3	4	<input type="text"/>	<input type="text"/>
0.4	5	<input type="text"/>	<input type="text"/>
0.5	6	<input type="text"/>	<input type="text"/>
0.6	7	<input type="text"/>	<input type="text"/>
0.7	8	<input type="text"/>	<input type="text"/>
0.8	9	<input type="text"/>	<input type="text"/>