

# PRE-LAB ACTIVITY 10

## UTILIZING THE WIND TUNNEL SOFTWARE


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### OBJECTIVES

After completing the calibration, the student will be able to:

1. Utilize the program capabilities.
2. Determine the specific data for different parameters inside the test section.

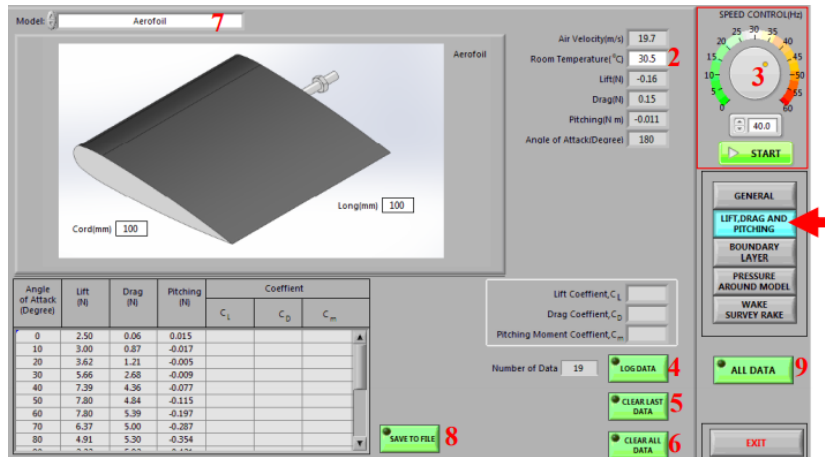
### PROCEDURES

1. Open the program by double clicking the icon  on the desktop, then figure 24 below will be shown.



*Figure 24. General Display Model*

2. Click the remaining tab pages to find the subject that you want. Each tab will give you an idea about the general description, capabilities, technical data, and the signal diagram of the wind tunnel.
3. Press the lift, drag and pitch button to start the experiment. The experimental screen will show as figure 25 below.



**Figure 25. Experiment Screen**

Take note:

- No. 1 button: fill in the name of the person using the program
- No. 2 button: key in the room temperature
- No. 3 button: adjust speed control by key in (0-60 Hz) or use by knob button and press. By clicking the start button, the fan will automatically start. Clicking the stop button will stop the fan from rotating.
- No. 4 button: collect the data result
- No. 5 button: Use for deleting the last data
- No. 6 button: Use to delete all recorded data
- No. 7 button: Allows you to select any preset test subject.
- No.8 button: Will allow you to save all logged data. The program will show “Data sheet” that its format is as figure 3 below.
- No. 9 button: Click to present analysis data on screen and include this data in the saved data file

Experiment : Lift , Drag and Pitching						
Tested by :    Date : 06/09/56    Time : 10:41						
Model : Aerofoil , Dimensions: 100 x 100 mm						
Air Velocity 24.5 m/s    Room Temperature: 30.0 Degree Celsius						
Angle of Attack (degree)	Lift (N)	Drag (N)	Pitching (N.m)	Coefficient		
				CL	CD	Cm
1	0.10	0.16	-0.031			
10	1.34	0.47	-0.025			
20	2.06	1.15	0.002			
30	2.33	1.72	-0.018			
40	2.52	2.34	-0.031			
50	2.46	3.08	-0.034			
59	2.06	3.70	-0.041			
70	2.10	4.38	-0.057			
80	1.25	4.79	-0.060			
90	0.07	4.76	-0.054			

**Figure 26. Data Results**

- 4. Key in your full name.
- 5. Key in the room temperature.

6. Select model for the experiment according to the experiment setup. We will use the long aerofoil for this experiment.
7. Adjust the wind velocity (20 m/s) control for the experiment.
8. Set the model's angle of attack to zero degree
9. Collect the data result
10. Rotate the model at 10 degrees increment and repeat step 9.
11. Click the save to file button and choose the desktop as file location. Assign your name as the file name. Provide data sheet on the next page under table A-1.
12. Write your conclusion for this activity on the last page.

### **PRE-LAB ACTIVITY 2 RESULTS SHEET**

<b>NAME OF STUDENT</b>	
<b>DATE</b>	
<b>COURSE NUMBER/COURSE NAME</b>	
<b>SEMESTER &amp; ACADEMIC YEAR</b>	
<b>NAME OF INSTRUCTOR/PROFESSOR</b>	

Table A-1

Patient Information	
Full Name	
Date of Birth	
Gender	
Address	
City	
State	
Zip	
Phone	
Medical History	
Current Medications	
Previous Surgeries	
Chronic Conditions	
Family History	
Physical Examination	
Vital Signs	
General Appearance	
Head, Eyes, Ears, Nose, Throat	
Heart, Lungs	
Abdomen	
Extremities	
Neurological	
Laboratory Tests	
Blood Work	
Urine Analysis	
Imaging Studies	
Treatment Plan	
Medications	
Therapies	
Follow-up	
Patient Education	
Instructions	
Referrals	
Physician Signature	
Date	

***CONCLUSION:***