Aeroelasticity

Lecture 6:
Matlab Session – p-k method

G. Dimitriadis
Matlab tutorial example

• Set up the p-k equations of motion for a pitching and plunging 2D flat plate.
• Write a code to solve the p-k equations
• Plot the variation of natural frequency and damping ratio with airspeed
Parameter values

• You can choose your own system parameters or use the following:
  – $c=0.25\text{m}$, $x_f/c=0.4$, material=aluminium, plate thickness=0.02m
  – Uncoupled, undamped frequencies:
    • Plunge= 2Hz
    • Pitch=8Hz
  – Air density: $\rho=1.225 \text{ Kg/m}^3$.  