Reynolds number

Engineering Fluid Mechanics

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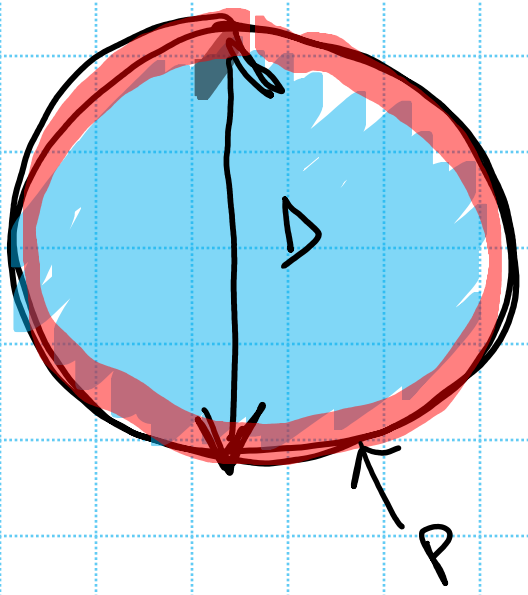
$$Re = \frac{\text{INERTIAL FORCES}}{\text{VISCOUS FORCES}} = \frac{\rho V L}{\mu} = \frac{V L}{\nu}$$

D D



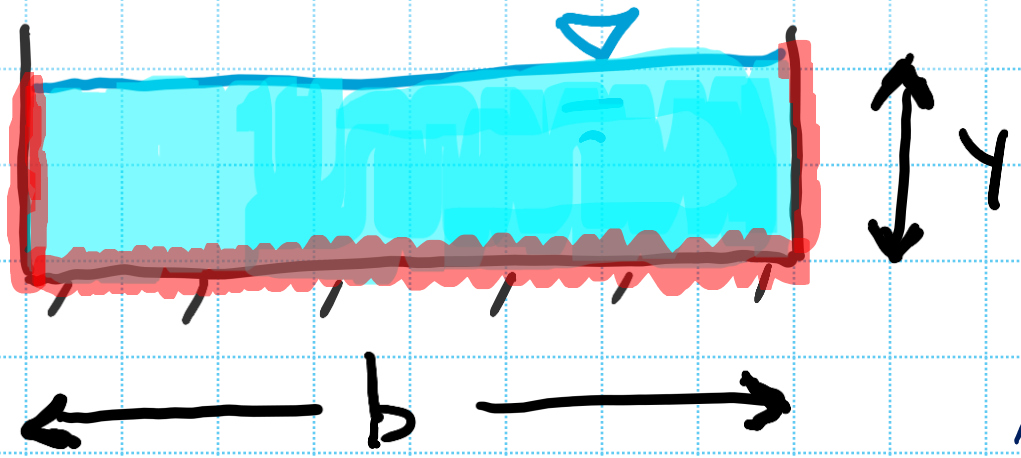
$$D_H = \frac{4A}{P} = \frac{4\left(\frac{\pi D^2}{4}\right)}{\pi D} = D$$

D_H: HYDRAULIC DIAMETER

P: WETTED PERIMETER

$2300 < Re \rightarrow$ LAMINAR

Reynolds number



HYDRAULIC DIAMETER

$$D_H = \frac{4 \cdot A}{P} = \frac{4(by)}{2y+b}$$

$$A = by \qquad P = 2y + b$$

$$R = \frac{A}{P} = \frac{by}{2y+b}$$

↑ HYDRAULIC RADIUS

$$D_H = 4 * R$$

IN FREE SURFACE FLOW

$Re < 500 \rightarrow$ LAMINAR

IN INTERNAL FLOW

$Re < 2300 \rightarrow$ LAMINAR

Reynolds number of free surface flow

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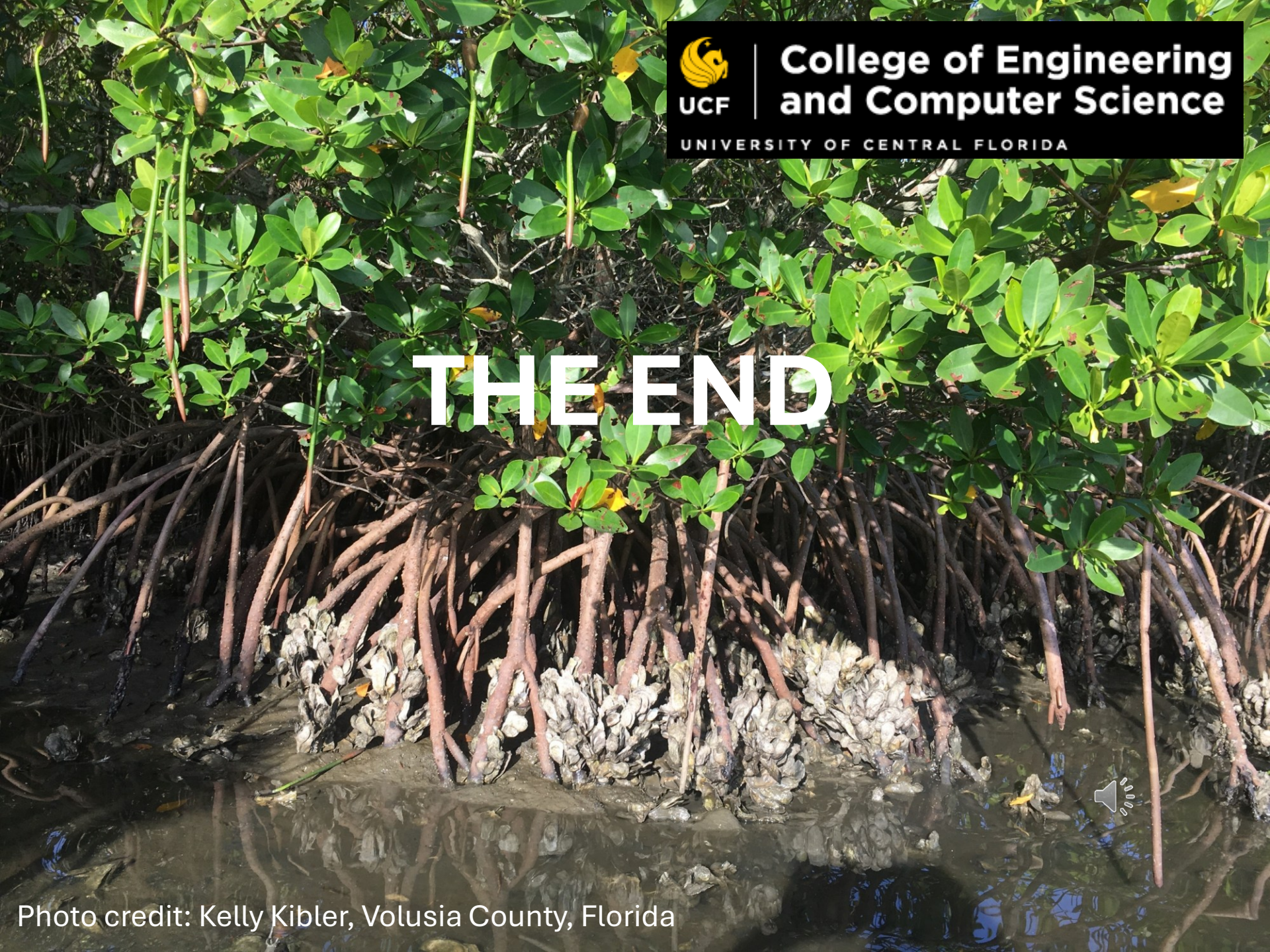
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THE END
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