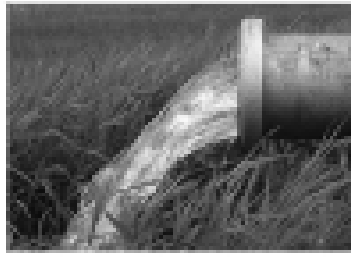


## Chapter 1 - INTRODUCTION



Prepared for CEE 3500 - *CEE Fluid Mechanics*

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## Scope of Fluid Mechanics (1)

- Fluids: gases and liquids, water and air most prevalent in daily experience
- Examples:
  - Flow in pipes and channels -- air and blood in body
  - Air resistance or drag -- wind loading
  - Projectile motion -- jets, shock waves
  - Lubrication -- combustion
  - Irrigation -- sedimentation
  - Meteorology -- oceanography

2

## Scope of Fluid Mechanics (2)

- Used in the design of:
  - Water supply system -- waste water treatment
  - Dam spillways -- valves, flow meters
  - Shock absorbers, brakes -- automatic transmissions
  - ships, submarines -- breakwaters, marinas
  - Aircrafts, rockets -- computer disk drives
  - Windmills, turbines -- pumps, HVAC systems
  - Bearings -- artificial organs
  - Sport items:
    - \* Golf balls
    - \* Race cars
    - \* Surf boards
    - \* Yachts
    - \* hang gliders

3

## Fluids... fluids... everywhere



4

## As fish habitat...



5

## For reptile habitat...



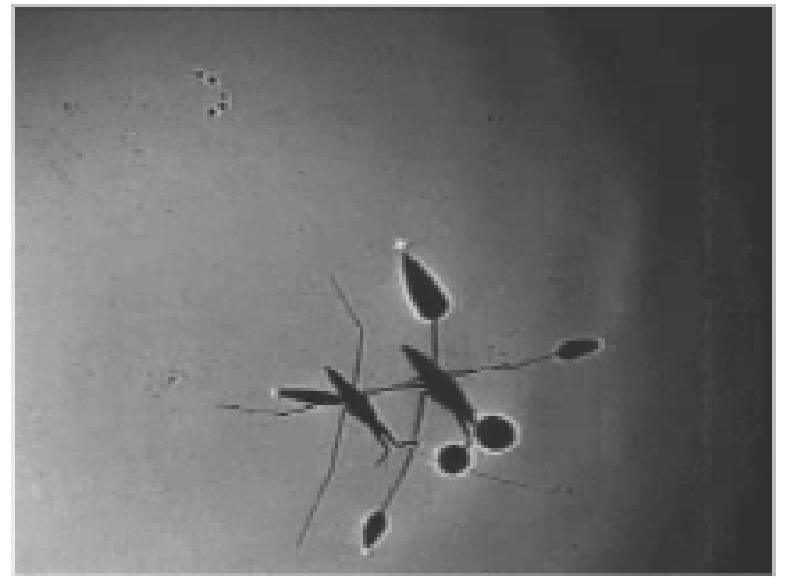
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***For mammals habitat...***



7

***For insects to walk on a surface...***



8

***In rivers and streams...***



9

***A tornado... an atmospheric vortex***



10

***Air to breathe...***



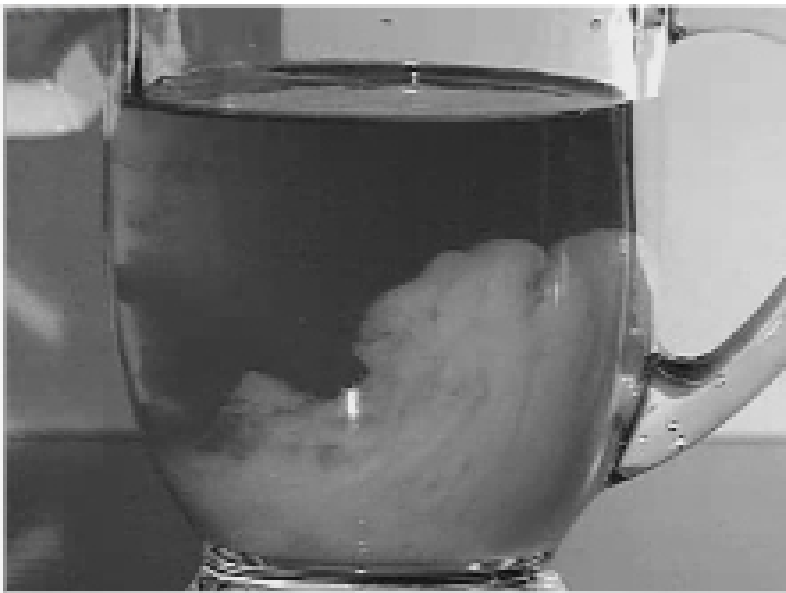
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***Mixing (as in soups)***



12

***Mixing milk in coffee...***



13

***Air as a transportation mean...***



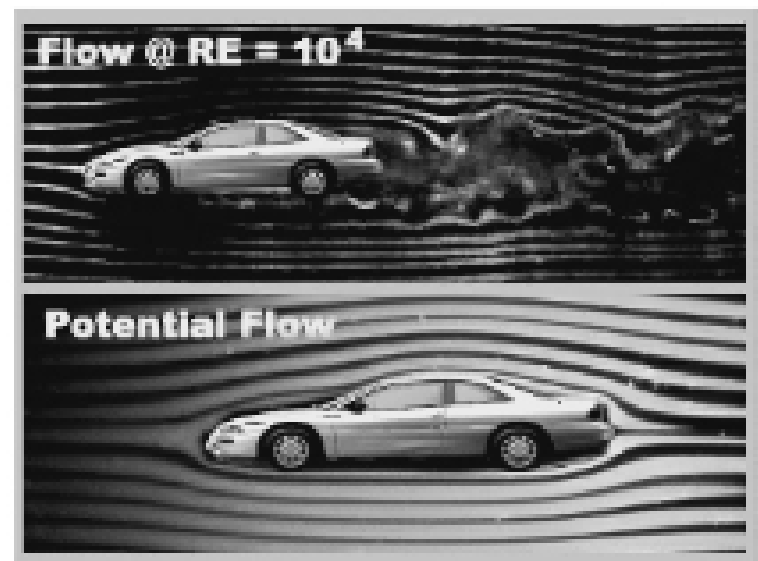
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***Water surface for boating...***



15

***Flow of air around cars...***



16

***Gases used as propulsion agents***



17

***Air resistance to slow down a landing***



18