

# REE 470: CAD Course - Fluent Tutorials

## Tutorial List:

Tutorial links can be found at

[https://drive.google.com/open?id=1x\\_g0HYqhww0pkyvrkINtGvFMovp3VDxO](https://drive.google.com/open?id=1x_g0HYqhww0pkyvrkINtGvFMovp3VDxO)

## CFD Tutorials

<u>Number</u>	<u>Tutorial Name</u>	<u>Location</u>	<u>Due Date</u>
1	Flow over an Airfoil	<a href="#">Link</a>	4/10/2018
2	Flow over an Airfoil at different angle of attack	<a href="#">Link</a>	4/10/2018
3	Turbulent Flow past a backward step	Tutorial Folder	15/11/2018
4	3D Transonic Flow over a Wing	<a href="#">Link</a>	22/11/2018
5	Vertical Axis Wind Turbine (Part 1) – Steady	<a href="#">Link</a>	29/11/2018
6	Vertical Axis Wind Turbine (Part 2) – Transient	<a href="#">Link</a>	6/12/2018

## Meshing Tutorials

<u>Number</u>	<u>Tutorial Name</u>	<u>Location</u>	<u>Due Date</u>
1	Tee Pipe	Tutorial Folder	25/10/2018
2	Ventilation System	Tutorial Folder	25/10/2018
3	Main Gear	Tutorial Folder	8/11/2018
4	Automotive External Body	Tutorial Folder	8/11/2018

## FEA Tutorials

<u>Number</u>	<u>Tutorial Name</u>	<u>Location</u>	<u>Due Date</u>
1	Truss	Tutorial Folder	4/10/2018
2	Beam and Frame	Tutorial Folder	11/10/2018
3	Plate	Tutorial Folder	11/10/2018
4	Plate with a hole	<a href="#">Link</a>	1/11/2018
5	Modal Analysis of fixed-fixed beam	Tutorial Folder	1/11/2018

## Fluid-Structure Interaction Tutorials

<u>Number</u>	<u>Tutorial Name</u>	<u>Location</u>	<u>Due Date</u>
1	Probe – 1 way	Tutorial Folder	Bonus
2	Hyperalstic Flap	Tutorial Folder	Bonus
3	Wind Turbine Blade Fluid-Structure Interaction	<a href="#">Link</a>	Bonus

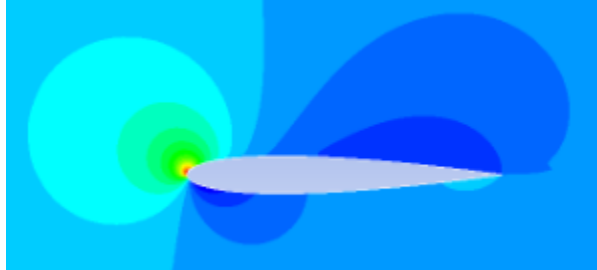
## **Tutorial Report Requirements**

- Each student Should submit the tutorials at the posted due dates.
- Late Tutorials will not be graded.
- The student should follow all tutorial instructions.
- The Report should include the following
  - Problem Description
  - Used Boundary Conditions
  - Pressure and Velocity Contours
  - Comparing with the provided experimental data if provided.

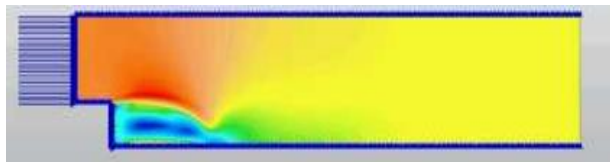
## Detailed Description of Tutorials

- **CFD Assignments**

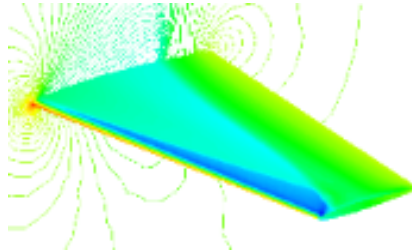
1. Flow around Airfoil



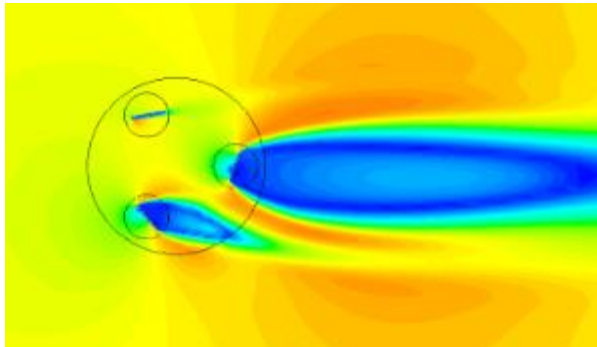
2. Flow over an Airfoil at different angle of attack
3. Turbulent Flow past a backward step



4. 3D Flow around a transonic Wing



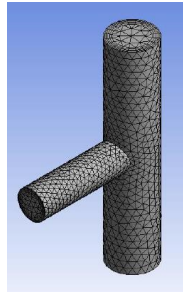
5. Vertical Axis Wind Turbine (Part 1) – Steady



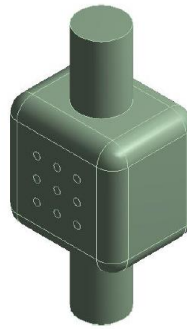
6. Vertical Axis Wind Turbine (Part 2) – Transient

- **Meshing Assignments**

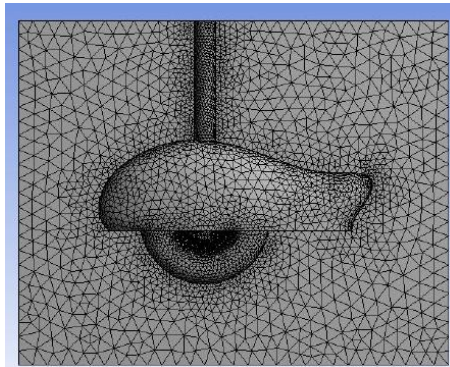
1. Tee pipe



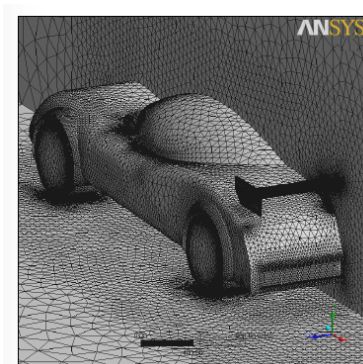
2. Ventilation System



3. Main Gear

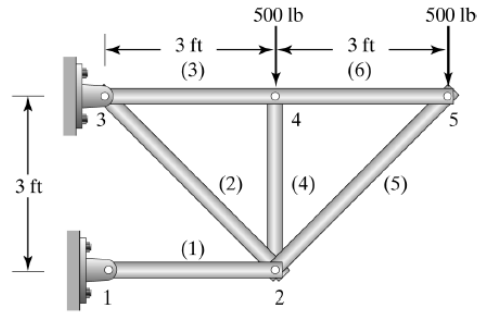


4. Automotive External Body

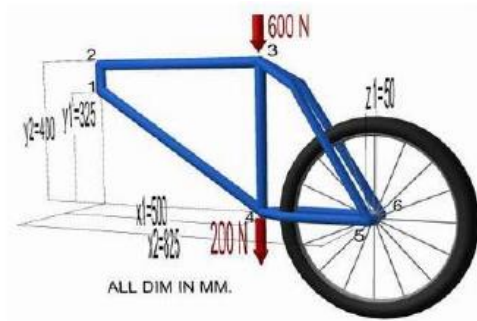


- FEA Assignments

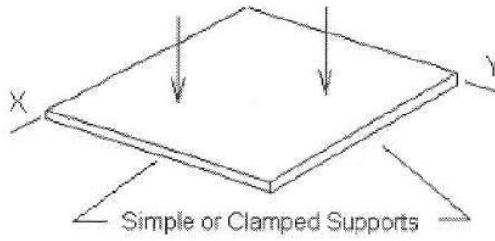
1. Truss



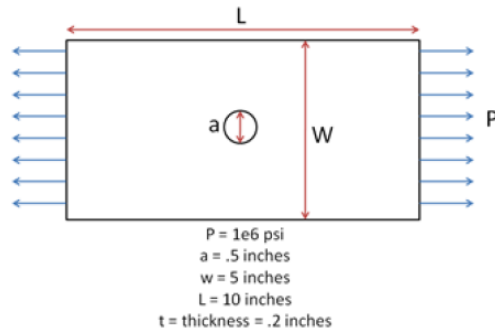
2. Beam and Frame



3. Plate



4. Plate with a hole

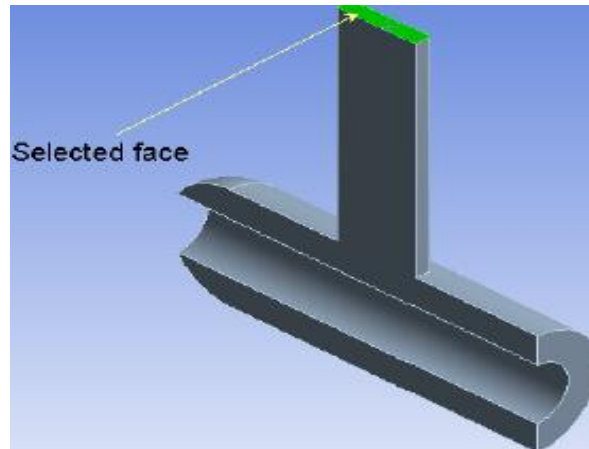


5. Modal Analysis of fixed-fixed beam

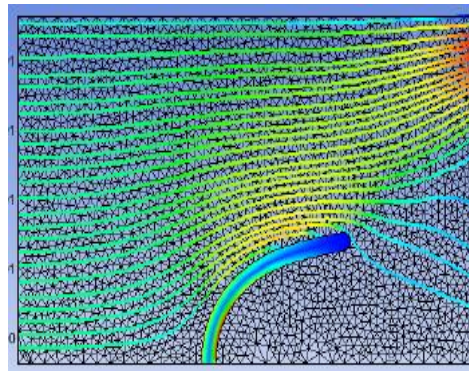


- **FSI Assignments**

1. Probe 1 Way



2. Hyperalstic Flap



3. Wind Turbine Blade Fluid-Structure Interaction

