

Subject group and discipline: Sciences (physics)

UNIT TITLE: _____

1. Find a title for the song you are going to hear.

What could be the title of this song? Justify your choice.

2. Listen to the song and read the lyrics to answer the questions below.

a) What is the title of the song? _____

b) What does the title show? What is the song all about?

c) Could the title "Fluids in motion" express equally successfully what the song is all about? Explain why/why not? _____

3. Listen to the song once again and read the lyrics.

Try to identify the words that are related to fluid dynamics. Write down as many as you can.

<i>e.g. density</i>	

4. Read the lyrics.

The **bolded** words are the ones you are looking for. How many have you found?

Complete the rest of the words in the above list.

5. Does fluid dynamics study only the flow of liquids? Find the lines (in the song) that answer this question.

6. Give a name to this Unit.

Choose a suitable title for this unit and write it in the space provided (on the top left corner of the previous page).

7. Identify in the lyrics the line(s) that describe(s) the following pictures:

E.g.

a) liquid fills your body up to the brim



<http://www.edenflows.com/water/>

b) _____



<http://www.aimage.org/>

c) _____



<https://www.tweha.com/en/surface-tension/>

d) _____



<https://www.thoughtco.com/what-is-the-boiling-point-of-water-607865>

e) _____



<http://howthingsfly.si.edu/gravity-air/air-stuff>

8. Which of the four videos explain each of the following?

a. Density is the first thing we can discuss
It's just the mass over the volume, no fuss **Video Nr** _____

b. Now let's please talk about viscosity
It's only apparent when there is a velocity **Video Nr** _____

[Video 1](#)

[Video 2](#)

[Video 3](#)

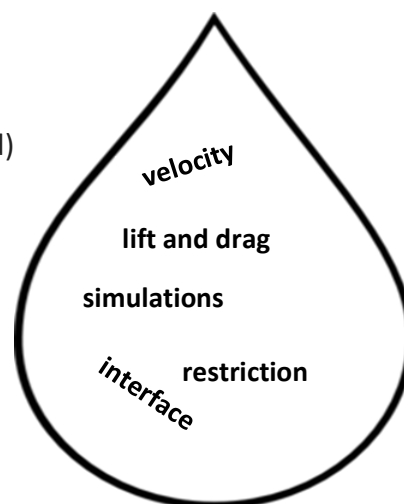
[Video 4](#)

8.1 Describe what you see in the videos you have chosen.

8.2 Explain the lines in exercise 8. Use examples from the 2 videos.

**9. Match each word of the column below
with a word from the droplet.** (read the lyrics, if needed)

computer	
viscosity	
surface tension	
internal friction	
aerofoils	



10. Write down the fluid properties mentioned in the song.

- _____
- _____
- _____

Start your own research:



11. Find fluid properties that aren't mentioned in the song.

12. Read the following lines. Where do they refer to? Give examples on how fluid dynamics contribute to the study of boats, cars and weather.

But that's not the only thing we can do
boats, cars and weather to name a few

13. Are there any other areas that benefit from the study of fluids?

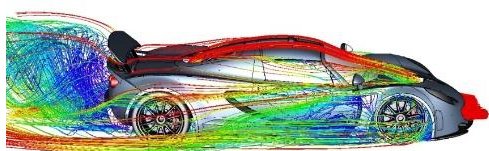
14. Use the words below to describe what you see on each picture/video:

- a) Aerofoil lift and drag
- b) Turbulence
- c) Models, simulations

Images Nr: _____

Images Nr: _____

Images Nr: _____



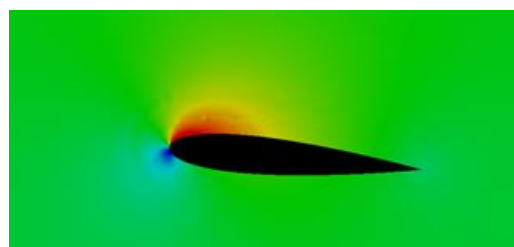
1



2



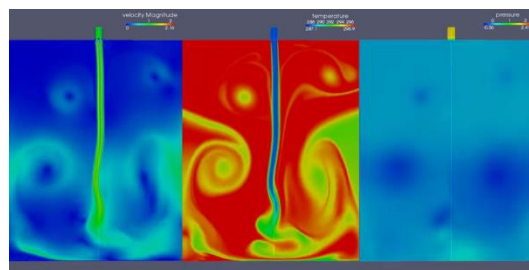
3



4



5



6

Image sources (exercise 14):

Image 1: <https://conself.com/blog/5-tips-to-improve-your-cfd-simulation-accuracy/>

Image 2: <https://medium.com/@ResearchFeatures/taking-inspiration-from-nature-for-a-new-generation-of-quiet-aerofoils-1a3b6e2e5d5c>

Image 3: <https://www.alphr.com/science/1006713/what-is-turbulence-forecast>

Image 4: <https://plus.google.com/+CFDViennaCenter/posts/7V5AcMqsSrd>

Image 5: <https://bgr.com/2016/01/19/severe-airplane-turbulence-photos/>

Image 6: <https://www.youtube.com/watch?v=Vf90K3SANss>

15. You have learned many new things. Make a list with the facts that seem interesting to you.



**Delphi
Technologies**



CITY UNIVERSITY
LONDON

This lesson plan is an outreach activity of the CaFE project
www.cafe-project.eu

The CaFE project has received funding from the European Union Horizon 2020 Research and Innovation programme. Grant Agreement No 642536