

## Lecture Listening Comprehension EXAMPLE

**Aim:** To develop the students' ability to listen to a long lecture, to take notes, use those notes to answer a number of comprehension questions and then reflect on the lecture critically.

**Lesson Time:** Approximately 2:00 hours

### Lead in

- Ask Students to read the 'title' & predict the content of the lecture.
- Ask students to write down key terms & language from the discussion.
- Feed in / check key vocabulary.

### Differentiation

#### Challenging

1. Students listen once & take notes (*Use the blank note-taking page or page with sub-headings*).
2. Give 5 minutes to tidy notes.
3. Listen again & add to notes (use a different colour pen).
4. Distribute questions. Set 30 minutes to answer using their notes.
5. Feedback: Distribute or project **ANSWERS**.

#### Medium

1. Students listen once & take notes (*Use the blank note-taking page or page with sub-headings*).
2. Distribute questions. Set 20 minutes to answer using their notes.
3. Listen again. Students answer the missed questions as they listen.
4. Give an extra 10 minutes to consolidate answers.
5. Feedback: Distribute or project **ANSWERS**.

#### Easier

1. Distribute questions. Students have 15 minutes to read the questions.
2. Students listen & answer the questions.
3. Give 10 minutes to tidy answers.
4. Students listen again. Check answers & answer missed questions.
5. Give 10-15 minutes to tidy answers.
6. Feedback: Distribute or project **ANSWERS**.

### Critical thinking questions

**Option 1:** Students individually reflect on the questions, make notes of their responses and write a short critical response paragraph to submit for teacher or peer feedback.

**Option 2:** Students ask and answer the questions in small groups.

**Full URL Link:**

[https://www.youtube.com/watch?v=zNVQfWC\\_evg](https://www.youtube.com/watch?v=zNVQfWC_evg)

## Quantum Fields: The Real Building Blocks of the Universe

[Listening Comprehension Questions] **EXAMPLE**

**Author:** Professor David Tong

**University:** Cambridge University

**Subject & Title:** Physics: *Quantum fields: The Real Building Blocks of the Universe*

**Date:** 2017

**Time:** 60:00

**Level:** \*\*\*\* \* [B2/C1]

**Link:** [https://www.youtube.com/watch?v=zNVQfWC\\_evg](https://www.youtube.com/watch?v=zNVQfWC_evg)

Check these words and phrases before listening:

### Key vocabulary

1. Atom.
2. [REDACTED]
3. Black Hole.
4. Coil.
5. [REDACTED]
6. Fluctuation.
7. Force.
8. [REDACTED]
9. Induction.
10. LHC (Large Hadron Collider).
11. [REDACTED]
12. Mass.
13. [REDACTED]
14. Neutron.
15. [REDACTED]
16. Oscillate.
17. Particle.
18. [REDACTED]
19. Proton.
20. Quark.
21. [REDACTED]
22. Spin.
23. [REDACTED]
24. The Big Bang.
25. Vacuum.
26. [REDACTED]

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**Note-taking Page (Blank) Page 1 EXAMPLE**

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**Note-taking Page (Blank) Page 2 EXAMPLE**

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**1. Introduction**

**2.** [REDACTED]

**3. Fields**

**4.** [REDACTED] **Theory**

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**5. The 'New' Periodic Table**

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**6. [REDACTED] Everything**

**7. Large [REDACTED] Collider (LHC)**

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**8. [REDACTED]**

## Quantum Fields: The Real Building Blocks of the Universe – David Tong

[https://www.youtube.com/watch?v=zNVQfWC\\_evg](https://www.youtube.com/watch?v=zNVQfWC_evg) EXAMPLE

Use your notes to answer the following questions using the sections headings to help you.

### **1. Introduction**

1.1. What's the outline of his talk?

1.2. How relevant is [redacted] in relation to his talk?

### **2. Particles**

2.1. What does an atom consist of according to Rutherford?

2.2. How [redacted] differ?

### **3. Fields**

3.1. How [redacted] 'field'?

3.2. Who was Faraday and [redacted] ?

3.3. What was **ONE** of his greatest discoveries?

### **4. Quantum Field Theory**

4.1. What [redacted] about?

4.2. How [redacted] to particles and fields?

4.3. What is a [redacted] ?

4.4. What is the Casimir [redacted] ?

4.5. How [redacted] fields?

4.6. What is the 'magnetic moment'?

4.7. What does [redacted] represent?

### **5. The 'New' Periodic Table**

5.1. How does the 'new' periodic table differ from the original?

5.2. How [redacted] the electron?

5.3. How do [redacted] with each other?

5.4. What **TWO** things is [redacted] for?

- 1.
- 2.

5.5. What [redacted] the Standard Model?

### **6. The Theory of Everything**

6.1. Name the ways the 'theory of everything' [redacted].



6.2. In what way [redacted] ?

6.3. What do physicists know and not know about the beginnings of the universe?

6.4. Explain [redacted] 'grand unification'.

### **7. Large Hadron Collider (LHC)**

7.1. What have been the **THREE** responses [redacted] to new ideas in physics?

- 1.
- 2.
- 3.

### **8. Summary**

**Critical thinking:** *What do you think of this lecture? Has anything surprised you? If so, what? What was missing from the lecture? [redacted] ? Why do you [redacted] branches of science for people to understand? Do you agree that one equation is enough to explain how [redacted] How can we be sure [redacted] ? Why do you think physicists continue to look for new ideas and theories to explain how the universe came to be? Can we ever really [redacted] ? What about looking more [redacted] st? How important is it to know what our universe is made of?*

## Quantum Fields: The Real Building Blocks of the Universe **ANSWERS**

### 1. Introduction

1.1. What's the outline of his talk?

*He will begin with an overview of the theoretical abstract ideas which underpin our current understanding of the universe and the experiments which look back to the Big Bang to understand what is happening. He will also give an overview of what progress we hope to make, and what is happening at the largest particle collider.*

1.2. How relevant is the periodic table of elements in relation to his talk?

*It was the first modern picture of what the universe is made of. It was thought to constitute of everything that exists in nature, but the speaker does not believe it is accurate enough and there is scope to go much deeper.*

### 2. Particles

2.1. What does an atom consist of according to Rutherford?

*It consists of a nucleus, which is made up of protons and neutrons, which consist ...*

**ALL ANSWERS INCLUDED IN PAID VERSION...**