

Week 2 physics

WHY STUDY PHYSICS?

HOW TO WRITE SUMMARY

Writing a summary, means giving a brief overview of a text's **main points (main idea+major details)** in your own words. Five key steps can help you to write a summary:

! Remember that a summary does not involve paraphrasing every paragraph of the article. Your goal is to extract main points, **leaving out background information and minor or additional details**.

STEP 1: Read the text carefully, highlighting important points and taking notes as you read.

STEP 2: Break the text down into sections (usually an introduction, main body, conclusion).

STEP 3: Identify the major details in each section (the most important points).

STEP 4: Write the summary in your own words to avoid plagiarism.

Do not copy and paste parts of the article, not just a sentence or two!!!

STEP 5: Check the summary to ensure that:

- You've accurately represented the author's work
- You haven't missed any essential information
- The phrasing is not too similar to any sentences in the original.

*You should **start** your summary with:*

The article/text under the headline ... published in ... deals with/is devoted to/is about

*You can use the following linking phrases in the **body** of the summary:*

Attention is drawn to the fact that...

In the opinion of the author, it is...

The author points out...

The author goes on to say...

The article discusses...

In the author's opinion/view...

The author makes it clear that...

The author expresses the idea that...

The author of the article takes a critical view of...

*You can use the following phrases to **finish** your summary:*

In conclusion, the author suggests that...

The author concludes that...

The author draws the following conclusion that...

The basic approach of the author is...

Task 1. Match the subject areas with the topics.

Subject areas

- 1) Electromagnetism
- 2) Optics
- 3) Atomic Physics
- 4) Quantum Mechanics
- 5) Solid State Physics
- 6) Mathematics
- 7) Computer Programming
- 8) Numerical Methods
- 9) Astrophysics

Topics

- a) The Schrödinger equation
- b) Crystalline lattice
- c) Delphi, C++
- d) Interference & diffraction
- e) Star formation
- f) Interpolation
- g) Radiation
- h) Differentiation and integration
- i) Maxwell's equations

Task 2. Work in teams.

1. For each field of physics (1-10) brainstorm two or three terms that go with it.

Example: *condensed matter physics – solid, liquid, gas, etc.*

2. Match the field of physics with the area(s) of its application.

3. Describe these branches of physics and their applications.

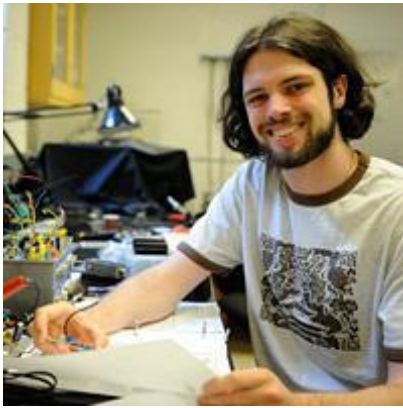
NB! Each area of application can refer to more than one field of physics.



TERMS	FIELDS OF PHYSICS	AREAS OF APPLICATION
	1) OPTICS	a) to create large capacity disks
	2) BIOPHYSICS	b) to develop medical imaging instrumentation
	3) RADIOPHYSICS	c) to make new materials
	4) NUCLEAR PHYSICS	d) to set up satellite communication
	5) NANOPHYSICS	e) to build telescopes
	6) CONDENSED MATTER PHYSICS	f) to operate a nuclear reactor
	7) ASTROPHYSICS	g) to produce computer chips
	8) PARTICLE PHYSICS	h) to design and create smart machines
	9) ACOUSTICS	i) to modify microorganisms for biofuel and bioelectricity
	10) MECHANICS	j) to develop atomic size machines
		k) to determine the age of an ancient object or a person
		l) to create better concert halls
		m) to develop lasers
		n) to understand the birth and evolution of the Universe
		o) to develop intercontinental broadband data channels
		p) to examine the level of safety of the car and its occupants

READING. Task 3. Read the student profile and take notes under the headings:

<input type="checkbox"/> reasons to study physics <input type="checkbox"/> reasons to choose Clyde University <input type="checkbox"/> duration of study and degrees <input type="checkbox"/> achievements <input type="checkbox"/> leisure time activities	A profile is a short article about someone, a description of a person that contains all the details that someone needs to know this person better.
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Student Profile

Michael Smith

After leaving school in 1998 with several standard grades, I went to college and completed the National Vocational Qualification in travel and tourism and for the next four years I worked as a business travel agent in Edinburgh. I always regretted not following my dream to university, so I went to night school to get the relevant qualifications necessary for university entry. From the very beginning I wanted to study physics at Clyde University. Physics was my favourite subject

at school and Clyde offers the most interesting and applicable courses. In fact, it seemed the ideal choice of university for me. The research facilities at Clyde are excellent, there are always computers available on campus 24 hours a day and the libraries are easy to work in.

There were many aspects of physics which initially interested me. I loved mathematics and finding out how and why things worked. This interest grew and developed during my time at Clyde. So, over the next four years I learned various branches of physics through completion of theoretical and experimental classes and eventually earned a BSc Honours degree. I enjoyed my undergraduate degree so much that when I finished I began a master's with the Bimolecular and Chemical Physics group at the university.

One of my other primary interests is teaching physics. I believe that guiding others through their physics journey is very rewarding and it helps me to improve my teaching skills. I hope I have found a job that allows me to achieve a balance of research and teaching.

So how do I spend my free time? I enjoy working with my Mac (yes, a Macintosh!). Also, I try to improve my programming skills. I took a C++ course here at Clyde University where we had to build a library as a final project. My electric circuit is online, with many documentations. It's nothing impressive as it was my first "real" C++ project, but it was good enough to give me a taste of the language.

My another 'love' is music. At the moment I'm learning to play the guitar. (It's not easy but I'm working really hard). I don't mind practicing every day, as it is my dream!

Besides, when possible I take part in department social events and like to help out with open evenings and department tours. I am also involved with the Physics Society.

I am sure that the best years of your life are those that you spend studying at university!

FOCUS ON GRAMMAR. Task 4. Look back in the profile. What verb tenses are used? Why does the author use these particular tenses?

2. Join the beginnings with the ends to make rules about the usage of these *Tenses*.

Tenses			Signal words
Present Simple	is used	- to speak about facts that are always true.	- <i>Soon</i> - <i>Next</i> <i>month/year/week</i>
Present Continuous		- to express daily routines and habits.	- <i>Always, usually, sometimes, etc.</i> - <i>Every Sunday/day/week/month/year</i> - <i>On Sundays, Tuesdays, etc.</i>
Past Simple			
Future Simple			

		to express something that happened at a past point in time.	- <i>right now</i> - <i>today</i>
		- to speak about scheduled events, even if those events are in the future	- <i>Ago</i> - <i>In + year/month/hours</i>
		- to make future predictions and promises	- <i>Yesterday</i> - <i>Last week/month</i>

Present Simple

The present simple is used (1) to express **daily routines and habits**.

Signal words: *usually, often, sometimes, rarely, never*

(2) to speak about **facts that are always true**. *The sun rises in the east.*

3) to speak about **scheduled event**, even it is in the future. *The train leaves at 6 o'clock.*

Positive **Subject + present tense + object(s) + time expression**

They work I the laboratory on weekends.

Negative **Subject + do/does + not (don't/doesn't) + verb + object(s) + time expression**

He doesn't drive to work.

Question **(Question Word) + do/does + subject + verb + object(s) + time expression**

Do they understand English?

Past Simple

The past simple is used to express **something that happened in past**.

Signal words: *Ago* *In + year/month* *Yesterday* *Last week/month/year*

Positive **Subject + past tense + object(s) + time expression**

I performed the experiment with the doctor yesterday.

Negative **Subject + did + not (didn't) + verb + object(s) + time expression**

I didn't finish the report.

Question **(Question Word) + did + subject + verb + object(s) + time expression**

Did they study for the test yesterday?

Future Simple

The future with "will" is used to make **future predictions and promises**.

Signal words *Soon* *Next month/year/week*

Positive **Subject + will + verb + object(s) + time expression**

The government will increase taxes soon.

Negative **Subject + will not (won't) + verb + object(s) + time expression**

The administration won't help us much with the project.

Question **(Question Word) + will + subject + verb + object(s) + time expression**

Why will they reduce taxes?

Task 5. Complete the sentences with the correct tenses.

a) At the moment Graham also (*to do*) a course in scientific journalism and he (*to seem*) to enjoy it greatly.

b) One of the things I (*to like*) about the atmosphere at college (*to be*) that students (*to study*) across the disciplines.

c) I (*to do*) a course in programming languages for my science project for a month, so now I (*to get*) more comfortable with basic mathematical concepts.

- d) Bryan (*to receive*) his doctorate from The University of Sydney in 2008. He then (*to take up*) a prestigious Hubble Fellowship at the Massachusetts Institute of Technology (MIT) where he (*to become*) involved in X-ray studies of the Milky Way.
- e) My friend (*to decide*) to take the science route and (*to plan*) to begin the Ph.D. track in physics at Boston University.
- f) Through my work on the GRB* satellite, I (*to learn*) a few things about signal detection in relatively noisy environments. In fact, I (*to make observations*) for a year now.
- g) Many of the university lecturers (*to be involved*) in front-line research and they (*to share*) the details of this work with their students.
- h) Look at them! Everybody (*to be pleasantly surprised*) with the results. They never (*to do*) anything like this before, but it (to work)!

WRITING. Use the *Michael Smith's Profile* as a model to write your personal Physics Student Profile in 150-200 words. Make use of the guidelines.

Paragraph 1

Your education background and reasons for choosing to study physics at university

Paragraph 2

The length of studying at the physics faculty

The subjects you are studying this semester

Your study experience and achievements

Compulsory and optional courses you are going to take in your third year at university

Paragraph 3

Your favourite leisure activities, how they contribute to your student life