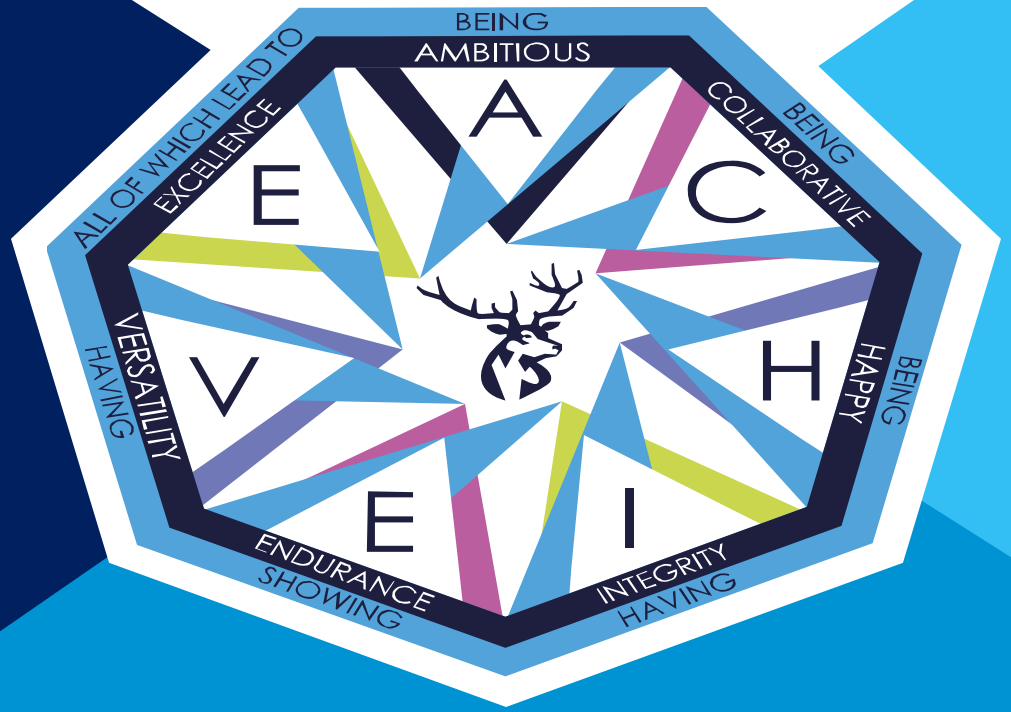
FURZE PLATT SENIOR SCHOOL



A-LEVEL PHYSICS

Open evening 2025

- Mr Curnow, Head of Physics

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Have you ever wondered…

Is teleport-ation possible?

What's inside a black hole?

What does $E = mc^2$ mean?

What *is* quantum physics?

Can we ever go back in time?

How can a particle be in two places at once?

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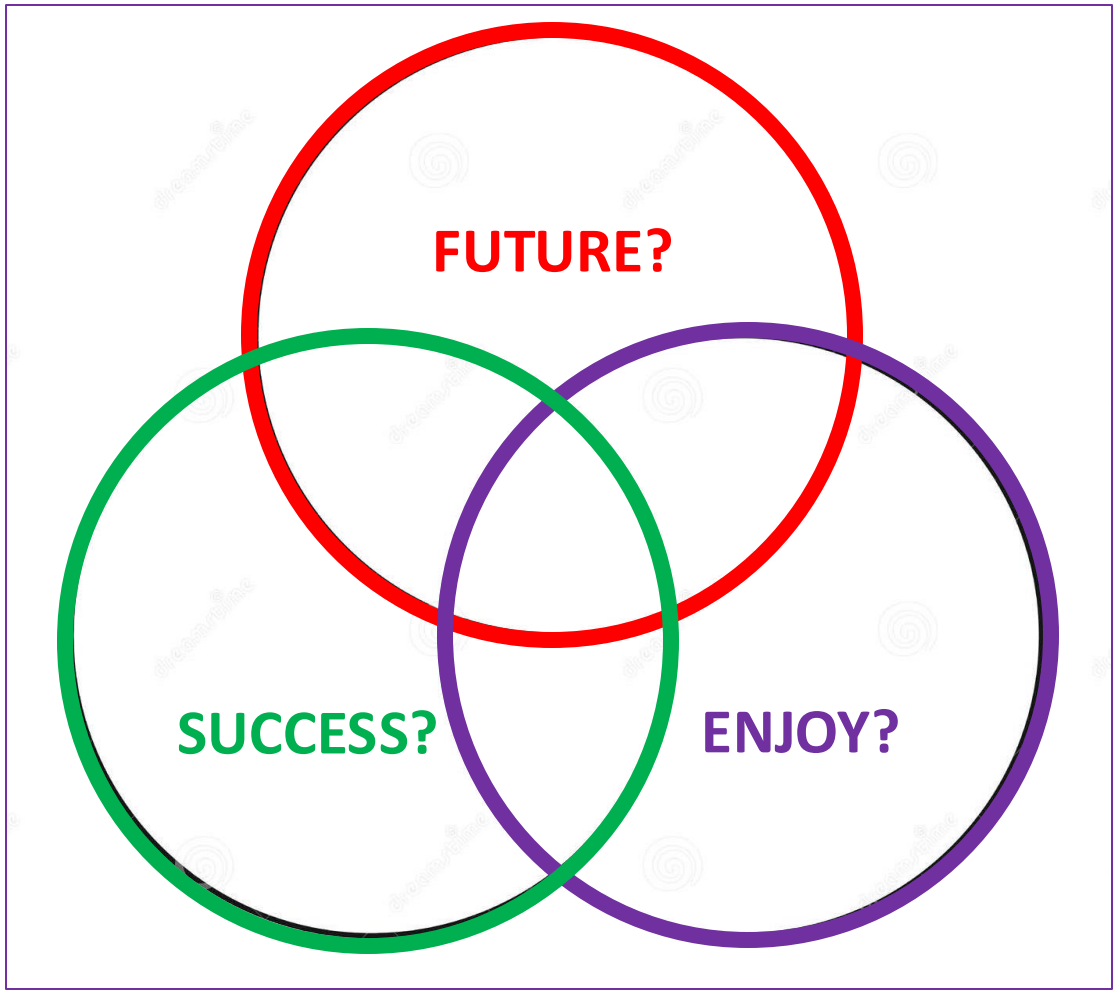
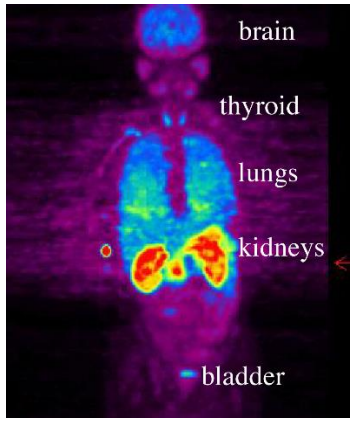
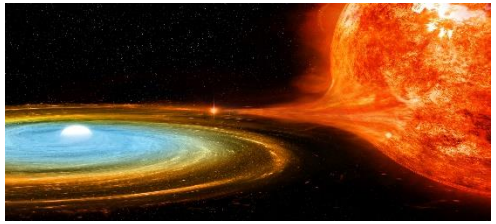
How to choose an A-level?

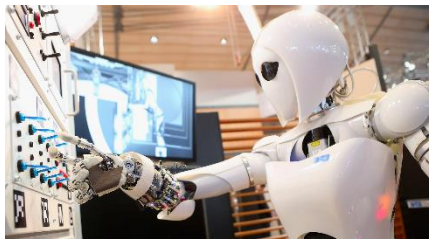


What sorts of jobs is A-level physics useful for?

- Engineering
- Computing / A.I.
- Medical physics
- Architecture
- Geoscientist
- Software designer





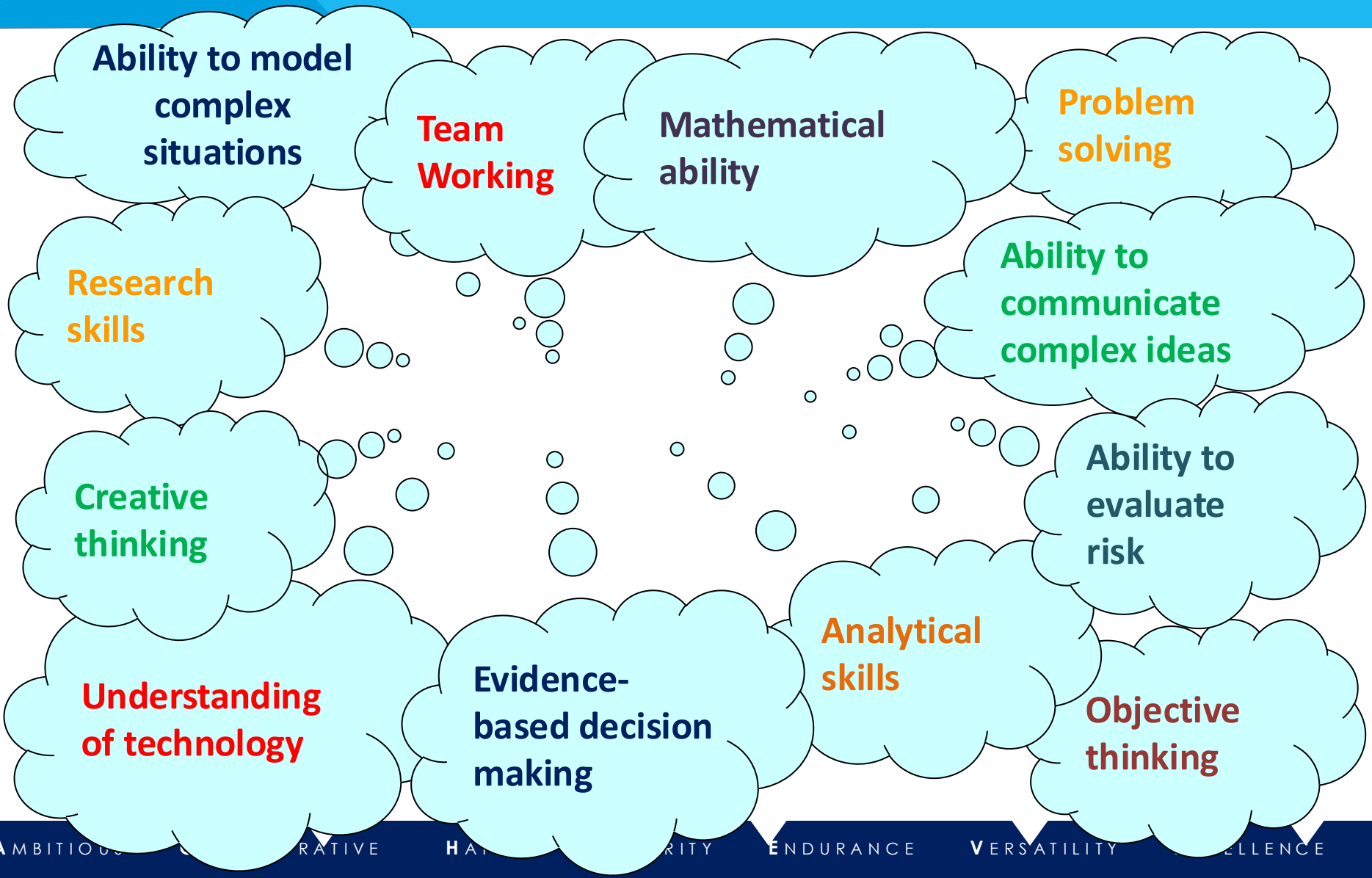


- Finance
- Astrophysics
- Meteorology
- Telecommunications
- Palaeontology
- Forensic scientist

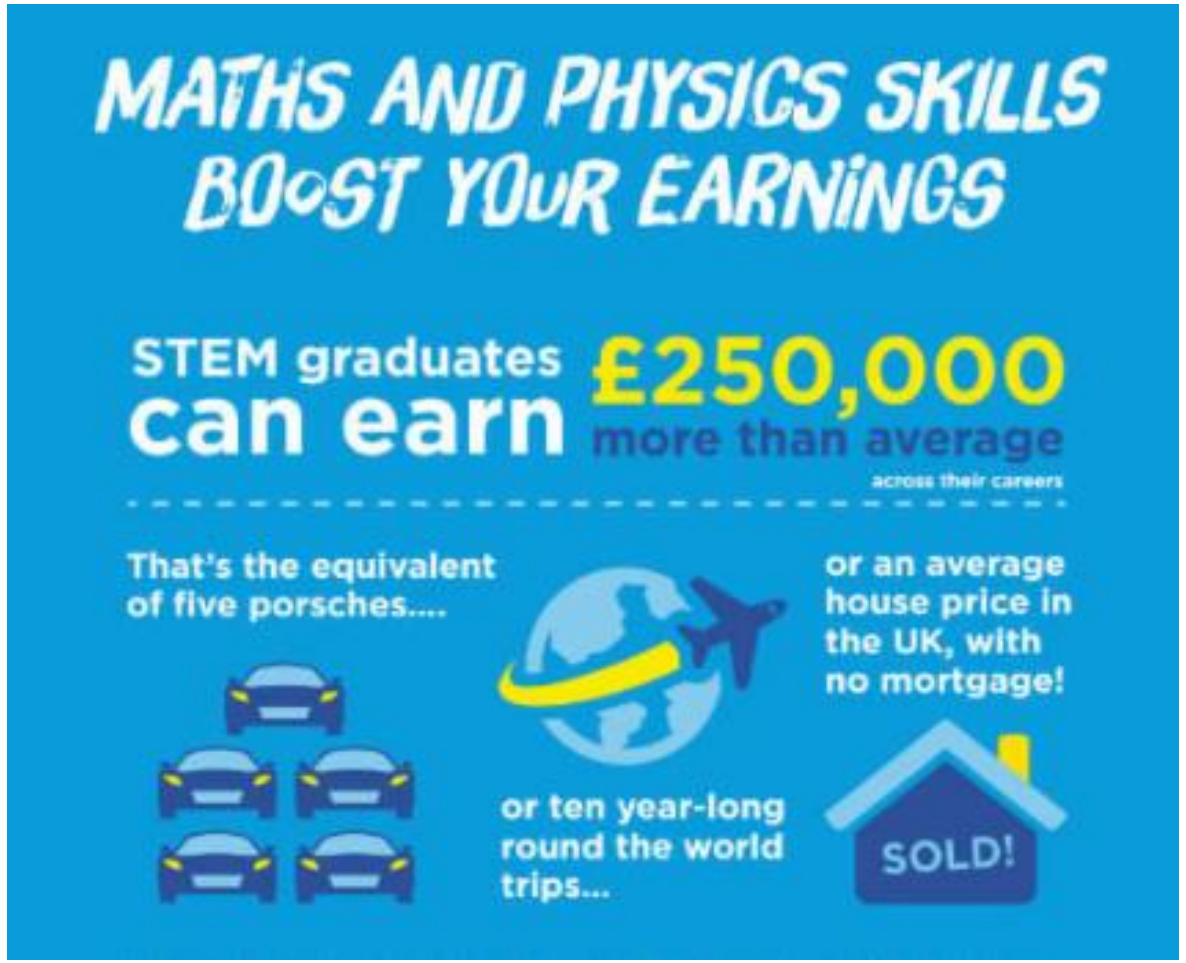
…and loads more! See displays in the Physics department or “UCAS careers” for more details.

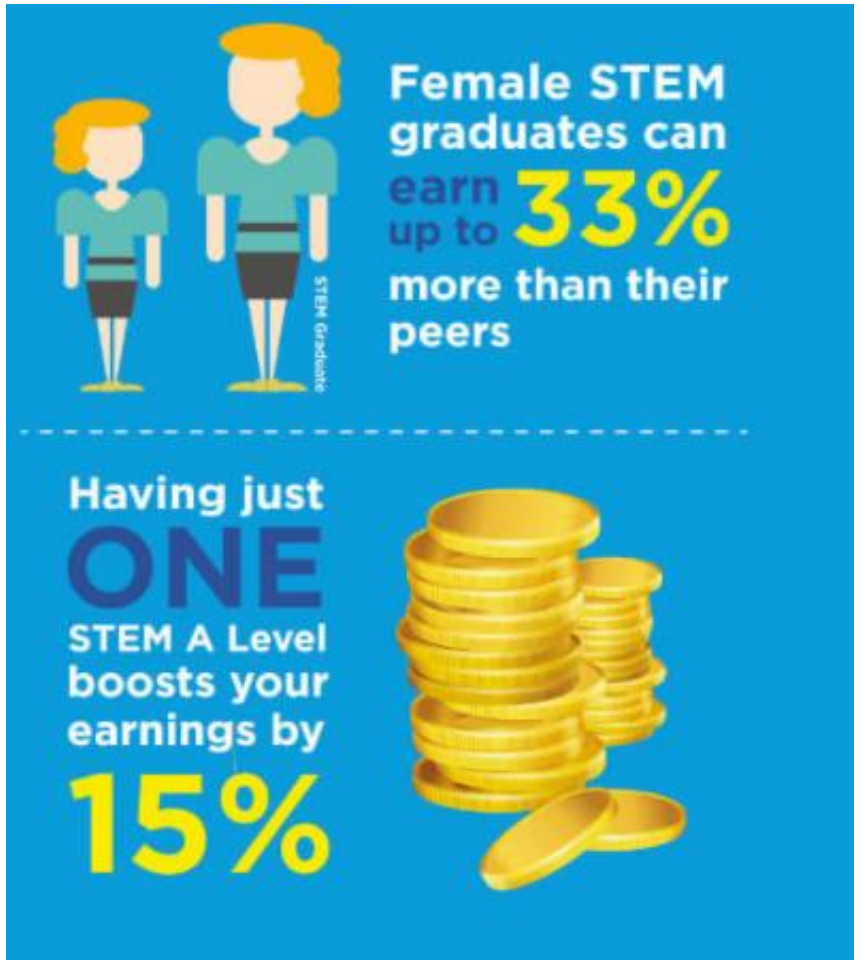
UCAS 2019

What skills does studying physics develop?



How can A-level physics help your future career?





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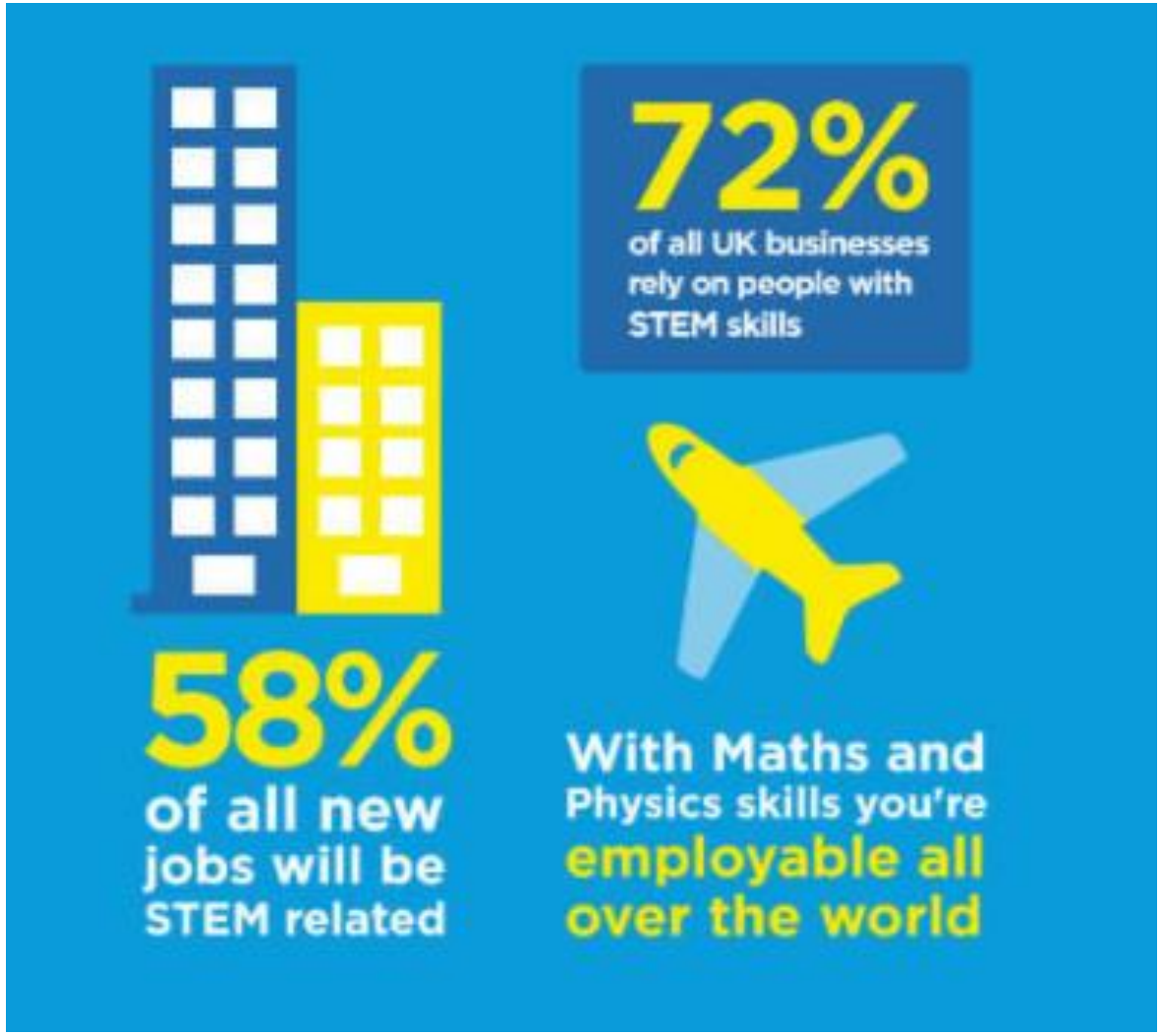

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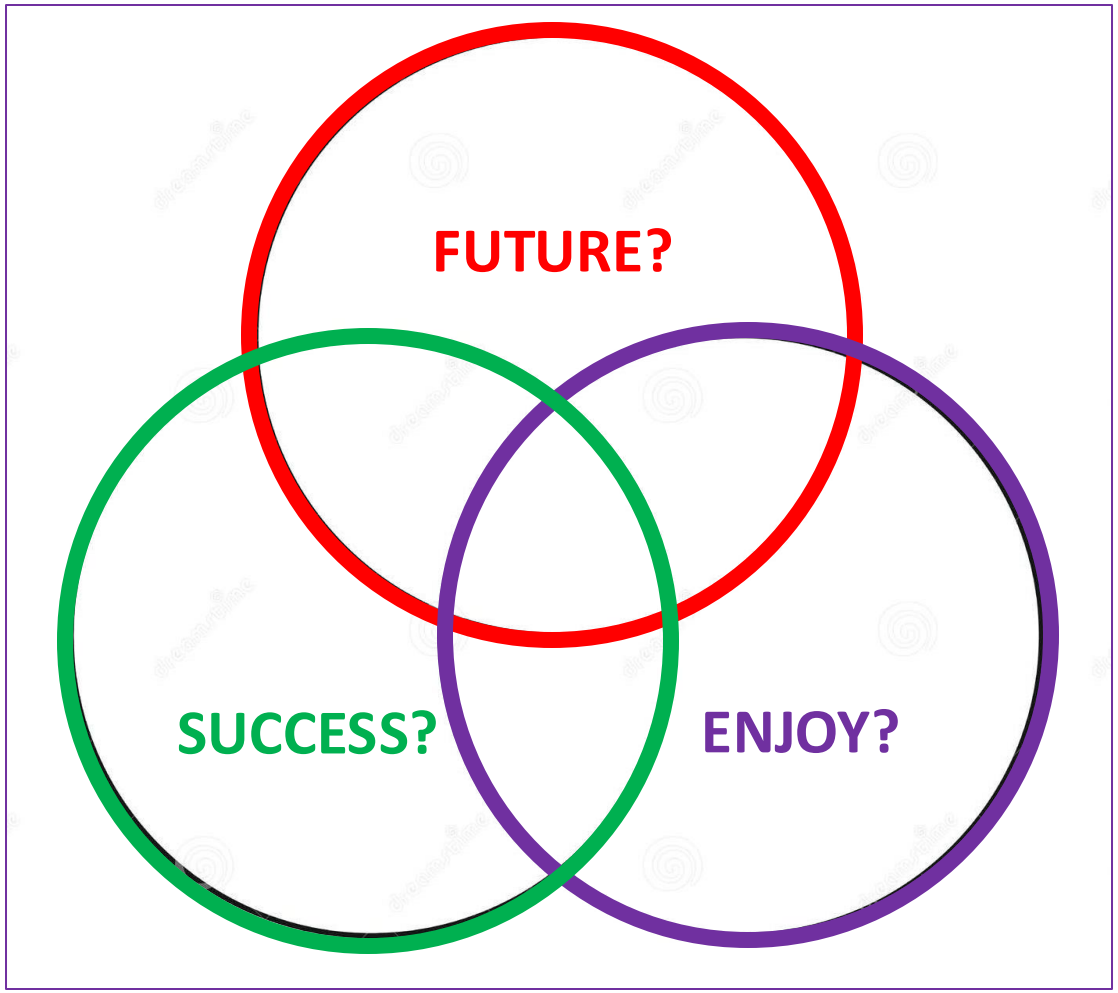
How to choose an A-level?



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CERN 2023 - Geneva, Switzerland

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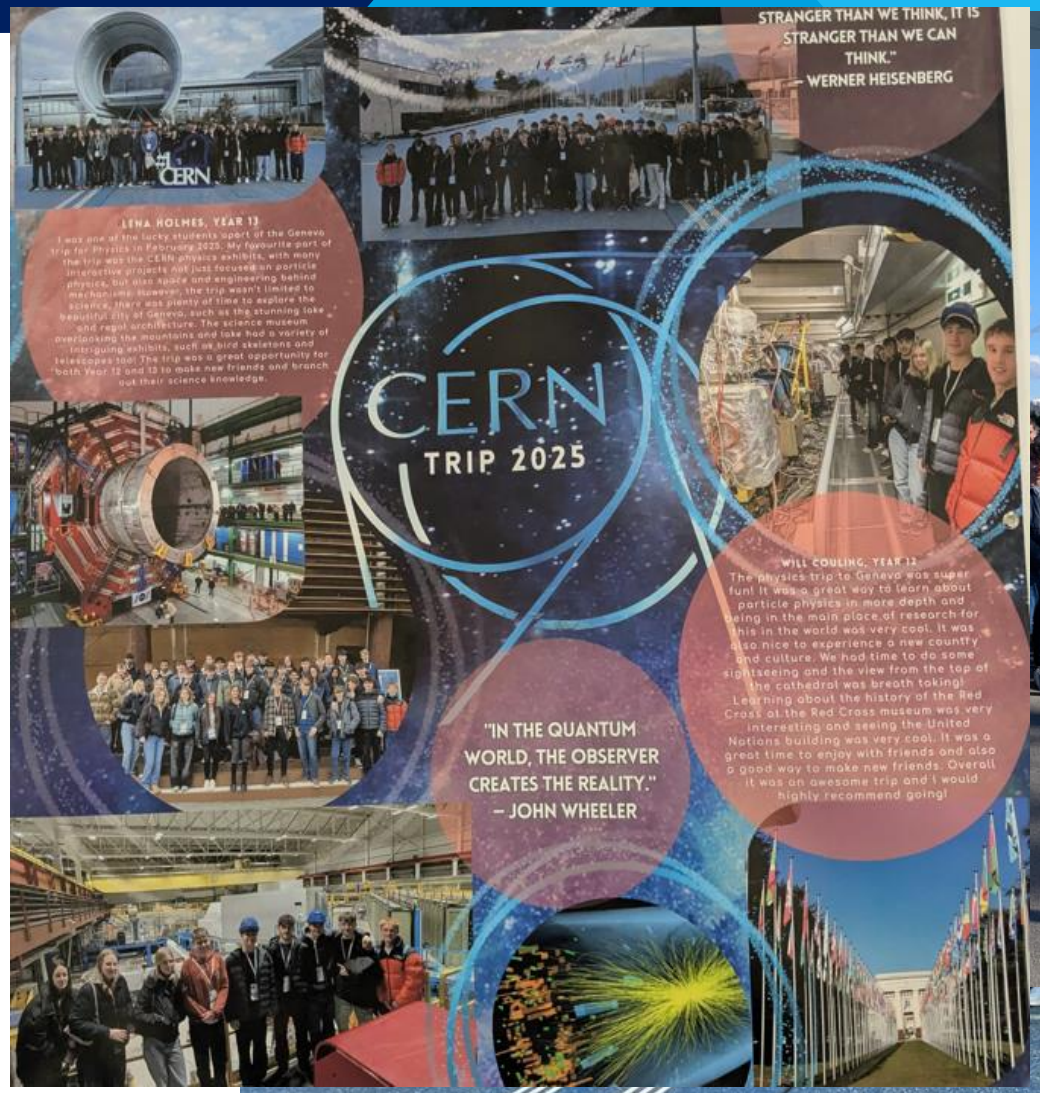
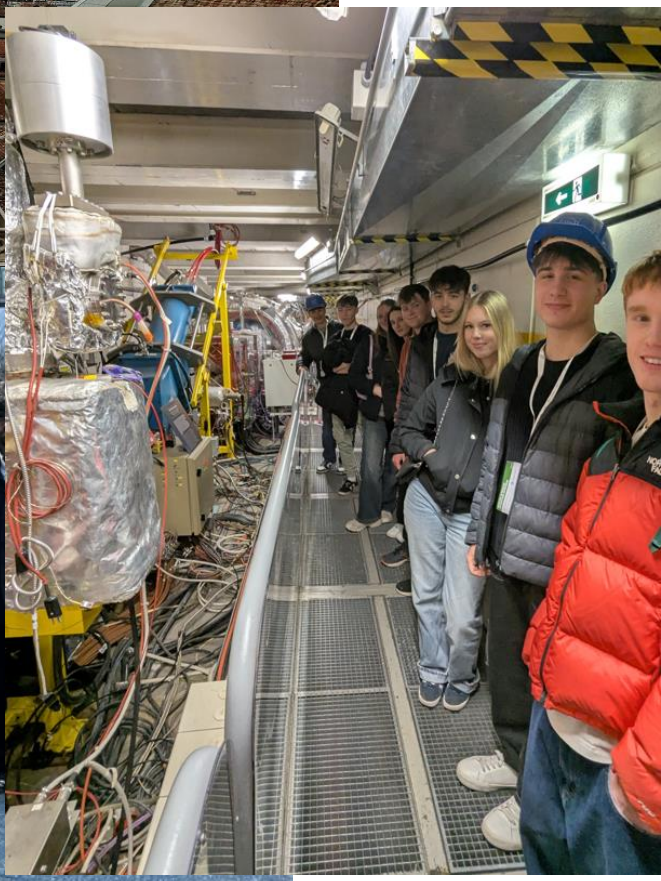
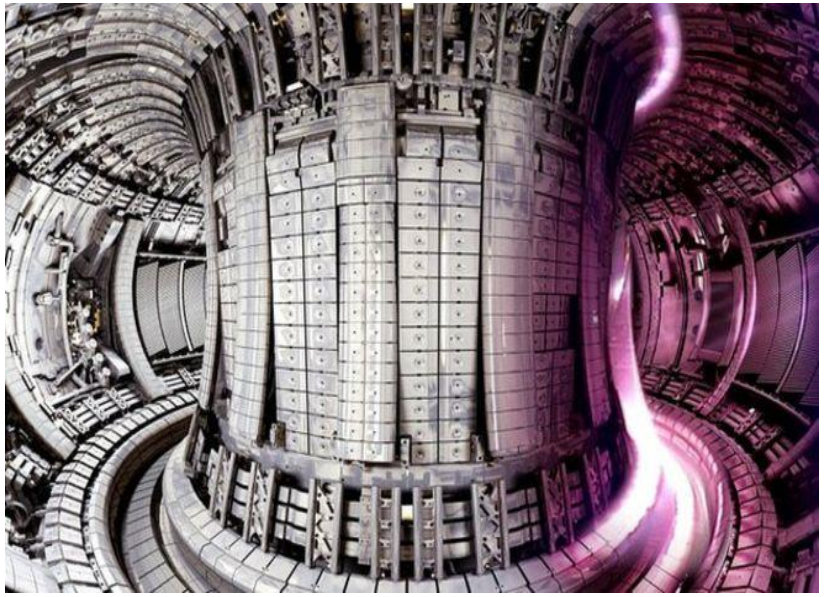
CERN 2025 - Geneva, Switzerland





AMBITIOUS COLLABORATIVE HAPPY INTEGRITY ENDURANCE VERSATILITY EXCELLENCE

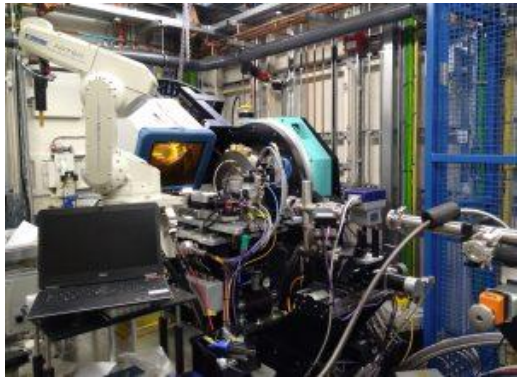
Other trips?



JET Fusion reactor (hottest place in the Solar System!)

Diamond Light Source Synchrotron

(Particle accelerator)



University lectures & demonstrations

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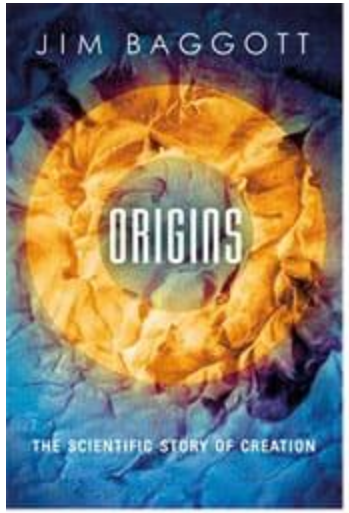
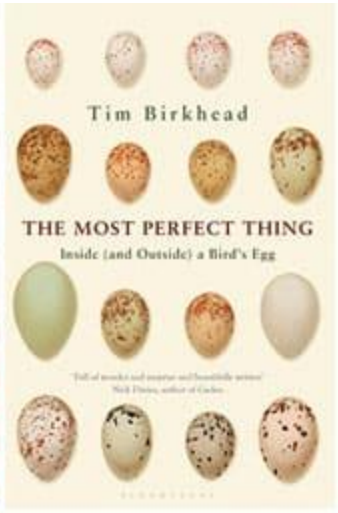
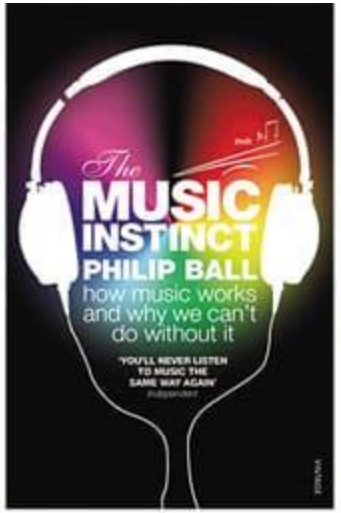
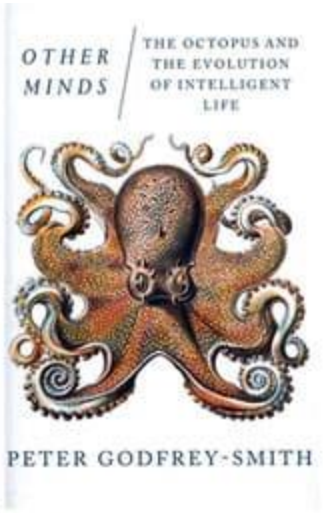
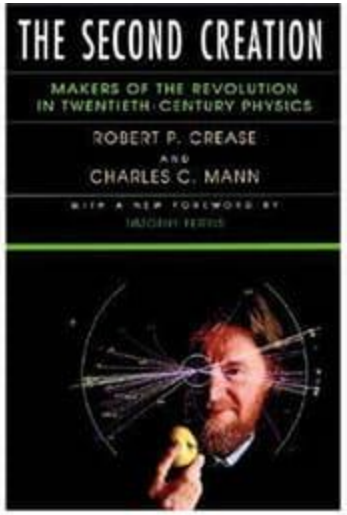
Wider reading

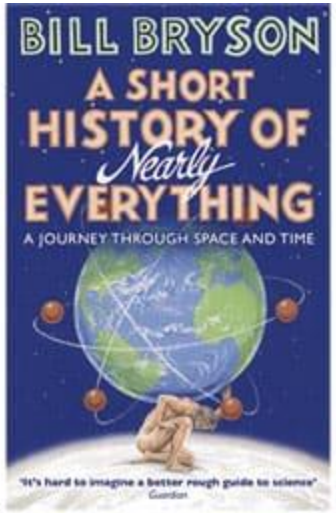


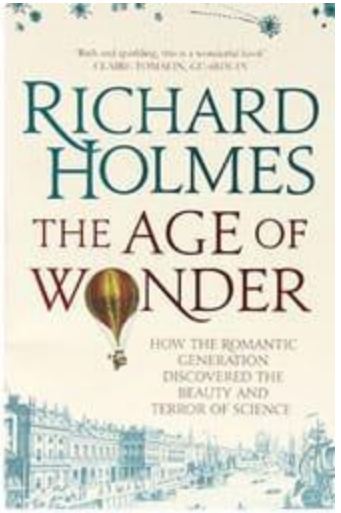


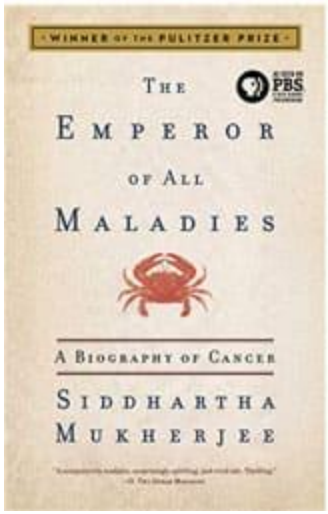


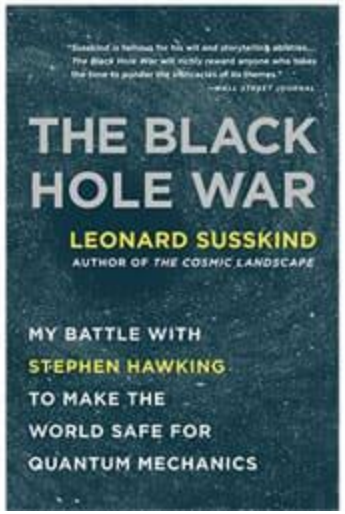


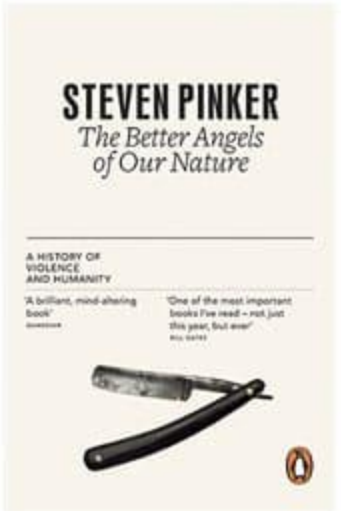


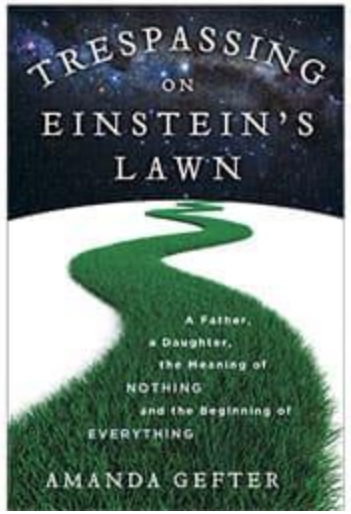


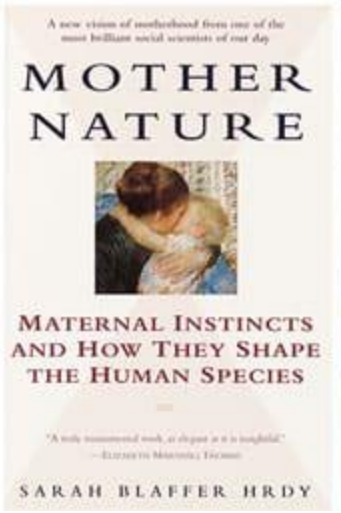


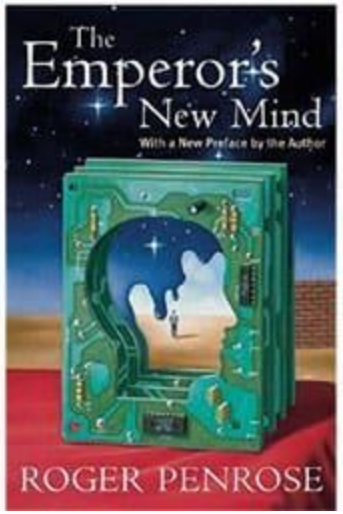


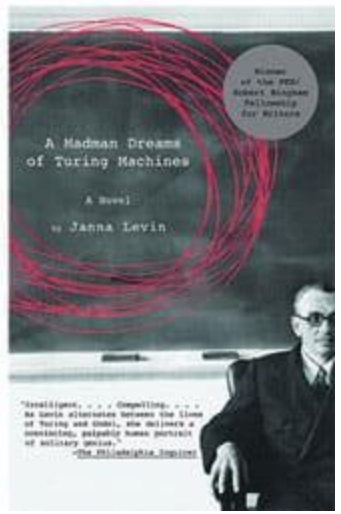












What else do I need to know?

You get an equation sheet for EVERYTHING

Particle Physics

Class	Name	Symbol	Rest energy/MeV
photon	photon	γ	0
lepton	neutrino	ν_e	0
		ν_μ	0
	electron	$e^\pm$	0.510999
	muon	$\mu^\pm$	105.659
mesons	π meson	$\pi^\pm$	139.576
		π^0	134.972
	K meson	$K^\pm$	493.821
		K^0	497.762
baryons	proton	p	938.257
	neutron	n	939.551

Properties of quarks

antiquarks have opposite signs

Type	Charge	Baryon number	Strangeness
u	$+\frac{2}{3}e$	$+\frac{1}{3}$	0

Waves

wave speed $c = f\lambda$ *period* $f = \frac{1}{T}$

first harmonic $f = \frac{1}{2l}\sqrt{\frac{T}{\mu}}$

fringe spacing $w = \frac{\lambda D}{s}$ *diffraction grating* $d \sin\theta = n\lambda$

refractive index of a substance s, $n = \frac{c}{c_s}$

for two different substances of refractive indices n_1 *and* n_2,

law of refraction $n_1 \sin\theta_1 = n_2 \sin\theta_2$

critical angle $\sin\theta_c = \frac{n_2}{n_1}$ for $n_1 > n_2$

Mechanics

moments moment $= Fd$

velocity and acceleration $v = \frac{\Delta s}{\Delta t}$ $a = \frac{\Delta v}{\Delta t}$

equations of motion $v = u + at$ $s = \left(\frac{u+v}{2}\right)t$

$v^2 = u^2 + 2as$ $s = ut + \frac{at^2}{2}$

force $F = ma$

Student opinion?

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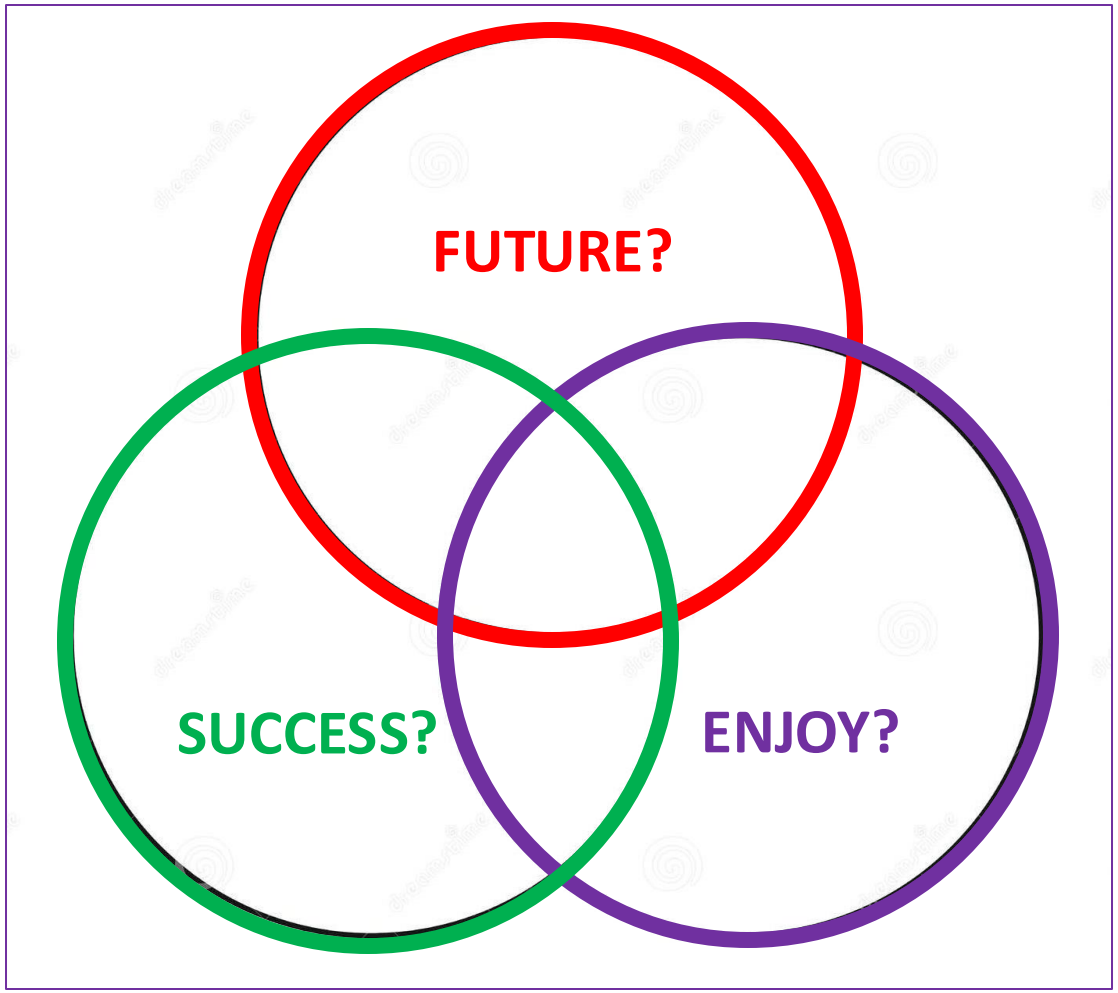
How to choose an A-level?



How will I be assessed?

Three exams in Summer 2027:

- Paper 1 (34%) – Regular & multiple choice questions about **Year 1 content**
- Paper 2 (34%) – Regular & multiple choice questions about **Year 2 content**
- Paper 3 (32%) – Mixture of questions on **practical experiments / analysis + optional topic**

How will I be assessed?

Assessments

Paper 1	Paper 2	Paper 3
What's assessed Sections 1–5 and 6.1 (Periodic motion)	**What's assessed** Sections 6.2 (Thermal Physics), 7 and 8 Assumed knowledge from sections 1 to 6.1	**What's assessed** Section A: Compulsory section: Practical skills and data analysis Section B: Students enter for **one** of sections 9, 10, 11, 12 or 13
Assessed • written exam: 2 hours • 85 marks • 34% of A-level	**Assessed** • written exam: 2 hours • 85 marks • 34% of A-level	**Assessed** • written exam: 2 hours • 80 marks • 32% of A-level
Questions 60 marks of short and long answer questions and 25 multiple choice questions on content.	**Questions** 60 marks of short and long answer questions and 25 multiple choice questions on content.	**Questions** 45 marks of short and long answer questions on practical experiments and data analysis. 35 marks of short and long answer questions on optional topic.

What will I be studying?

AQA Physics A-Level (7408)

YEAR 1

1. Measurement and their errors
2. Particles and radiation
3. Waves
4. Mechanics
5. Materials
6. Electricity

YEAR 2

1. Further mechanics
2. Thermal Physics
3. Fields
4. Nuclear Physics
5. *Optional topic*

(Medical, engineering, astrophysics, turning points, electronics)

Practical endorsement

We will be carrying out a minimum of 12 assessed practical investigations throughout the year, where you will need to demonstrate key skills:

- ✓ Following instructions
- ✓ Using initiative
- ✓ Recording and analysing results
- ✓ Behaving safely
- ✓ Research and referencing

These are either a pass or fail criteria, and students need to complete the practical activities well to obtain a pass for this part of the course

What do we expect from you?

- We expect pupils to:
  - Attend all classes
  - Pre-read the topics before each lesson
  - Complete home learning tasks on time
  - Attend weekly Physics Clinic for extra support
  - Undertake wider reading

Rule of thumb, for every hour in class → You work 2 hours outside of class

What do you need to do now?

1. Achieve at least a **‘6’ grade** in your Physics GCSE, or ‘**6/6’ grades** in Combined Science
2. Achieve at least a **‘6’ grade** in GCSE Maths

We also recommend students take A-Level Maths alongside Physics, so that you can have the best potential chance of succeeding

Further Information?

- Contact:
  - Mr Curnow (Head of Physics)
  - Mr Wright
  - Miss Rex

- Further Reading:
  - www.advancingphysics.iop.org
  - www.aqa.org.uk
  - https://www.ucas.com/job-subjects/physics

PHYSICS

See the world differently.