



Subject: Physics & Engineering Pre-University (Extension Material)

Dear Year 13

Congratulations on completing your A-level, even if it has not ended the way you were expecting. It has been a pleasure working with you for the last two years and I wish you all the best for the future. To move you in the right direction, here are some ideas for those of you moving into either a Physics or Engineering course.

Good luck to all of you.

Mr. Jones

Coding

I've put this first because you may not have thought of it. In both Physics and engineering you will need to program a computer to work for you, either to crunch the numbers or make something happen. Common languages are C++ and MATLAB and these sites could help you get a head start.

<https://www.codecademy.com/learn/learn-c-plus-plus>

<https://www.learncpp.com/>

You may also need to make use of Arduino or Raspberry Pi and you can learn how to do this here:

<https://www.arduino.cc/en/Tutorial/HomePage?from=Main.Tutorials>

<https://www.raspberrypi.org/blog/learning-python-with-raspberry-pi/>

Physics

If you are heading for a pure physics degree (theoretical, practical or astro) then here are a few ideas.

Continue ISAAC physics

Try to solve the 'extraordinary problems' and set yourself some boards with the difficulty turned right up.

Reading on talkphysics

Talkphysics is the Institute of Physics (IOP) forum for teachers, technicians and pupils to discuss problems and share resources, you'll find lots of information here.

Practice tasks

This website has some practice tasks for you to complete, putting your knowledge to the test

<https://nrich.maths.org/6465&part=>

Institute

The Institute of Physics has a section aimed at university Physics students, there's also a free membership scheme and the opportunity to apply for scholarships and bursaries.

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



Engineering

For those of you heading for engineering (good choice) here are a similar set of ideas however any of the Physics ideas above will also be relevant.

Suggested reading

You may not be heading for Cambridge but they have made the reading list for engineering available here:

<https://www.admissions.eng.cam.ac.uk/information/reading>

Practice tasks

Again, a chance to see how your physics knowledge applies to your chosen field with problems here:

<https://nrich.maths.org/6466>

Institutes

Each discipline has its own institution, the most common are below. Like the IoP there are opportunities for scholarships and work experience as well as free student membership.

Civil Engineering

<https://www.ice.org.uk/>

Mechanical Engineering

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

Electrical Engineering

<https://www.theiet.org/>

Again, good luck and If you have any questions or find something else that is really helpful then please e-mail me.