Physics A Level

Why study it and what do I need to do it?

Mrs Kathryn Robbins

Head of Physics

Year 13 Quotes: Why study physics?

- I recommend it if you enjoy physics and **want to learn how the world works**
- If you are good at it
- It answers a lot of questions you may have asked
- It makes the stuff in GCSE and A level **Maths** make sense
- Makes **Maths** seem more useful
- Large crossover between **Maths** and Physics
- Fits well with Chemistry too
- A lot of **problem solving** which is always fun
- **Logical thinking** and applying knowledge
- Rewarding
- Very important for most engineering courses and some mathematical courses
- Looks good for uni, really good qualification to have – not many have it
- Really fun subject, its actually **interesting** unlike XXXX
- Teachers are great ☺
- Trips are good
- Helps you earn lots of £££s

Year 12 Quotes: Why you shouldn't study physics

- **If you are not a strong mathematician /** not doing Maths A level
- Lots of content to learn
- **Lots of maths** and calculations
- Very hard
- Not all topics interesting to everyone / some maths bits boring
- **If you don't enjoy it already**
- **Requires a lot of commitment /** be driven to succeed
- Need to fully understand the GCSE content (or go over it in the summer)

(Most of these comments apply to all A levels)

Why Study Physics?

- **Essential** for access to physics and engineering courses.
- **Highly regarded** for other subjects such as medicine, law and economics because of the **thinking skills** and **problem solving** involved.
- (Physics Olympiad – Wednesday lunchtimes)
- Subject cross-over with maths and chemistry. Makes Maths, Physics and Chemistry a **powerful combination** to optimise your A Level grades.
- No formulae to learn and more time for practical work

- OCR B syllabus – developed by the Institute of Physics

- Not sure? Try an INSPIRE course this summer

Inspire

Course type –

All
Computer Science, IT and Software (INS)
Chemical Engineering (INS)
Engineering (INS)
Humanitarian Engineering
Material Science (INS)
RACE with STEM
Sustainability (INS)

Date +

Duration +

Education level +

Location +

Residential/Non-res... +

University of Cambridge Materials Science - Girls only
£245.00

University College London – Civil Engineering - Boys & Girls
£150.00

UCL - Green Biocompatible Technologies for a Sustainable Future - Girls only
£245.00

University of Edinburgh - Building a Sustainable Shelter - Girls only
£245.00

Lancaster University Engineering - Insight to Engineering - Boys & Girls
£245.00

Glasgow Caledonian University - Race with STEM - Boys only
£245.00

Student Expected Destinations 2020 / Teaching

- Engineering x 3
- Physics / Astrophysics
- Maths and Computing x 3
- Computer Science / Cybersecurity x 4
- Accountancy / Finance
- Chemistry
- History
- Biological Science
- 3 offers from Oxbridge so far…

- Currently 15-17 students in each year group
- 5 hours a week in year 12
- 4 hours in year 13
- 2 / 3 teachers

Student Destinations 2019 – 17 students

Degree Courses:

- Engineering x 5 (aero/ civil/general/mechanical)
- Physics / Astrophysics x 3
- Maths x 3
- Music
- Apprenticeship
- Gap Year then Robotics

Universities of:

- Nottingham x 4
- Durham x 2
- Newcastle
- Bath
- Warwick
- Southampton
- Hull
- Leicester

Students Destinations 2018 - 20 Students

- Engineering x 2
- Physics/ Astrophysics x 2
- Computer Science/ Cyber Security x 4
- Natural Sciences
- PPE
- Gap Year x 2
- Product Design
- Maths x 3
- Radiography
- Economics
- Biomedicine
- Music Production

- Universities of Warwick, Durham, Loughborough, Sheffield, Liverpool, Surrey, Hertfordshire, Birmingham, Bournemouth, UEA

What do I need?

- Enthusiasm for the subject
- Determination to work hard and persevere
- Great physics and maths skills and knowledge
- Minimum of 6 in physics (or 6 6 in Combined Science)
- Minimum of 6 in maths

The Importance of good Maths Skills based on 2018 & 19 cohort

GCSE Grade (or equivalent)		Most likely A Level Grade
Maths	Physics	
8/9	8/9/7	**A* A**
7	8/9/7	**C**
6	6	**E**

Trips

Year 12 - National Space Centre Careers

UCL:Electrical Engineering / Computer Science

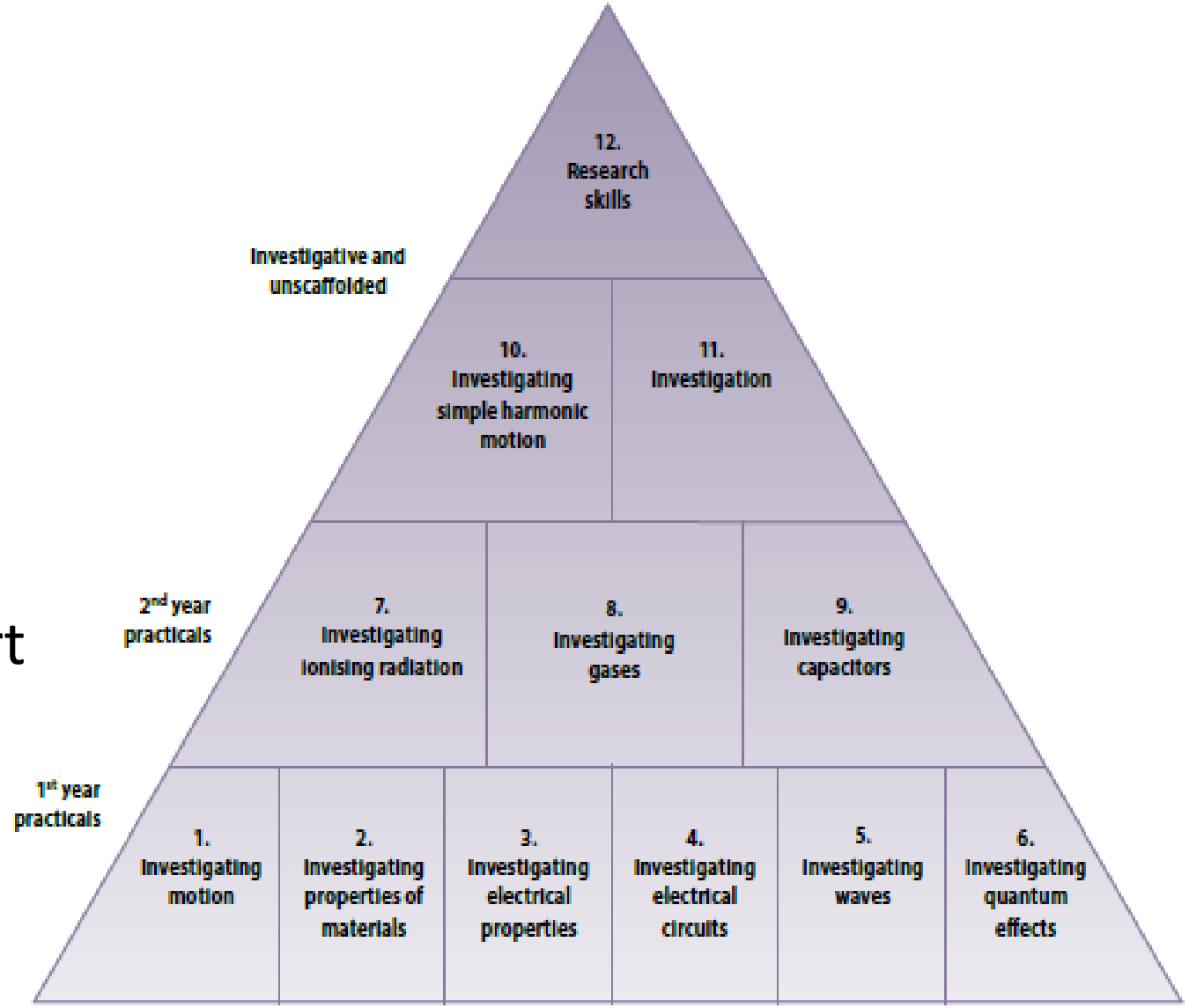
Cambridge: General Engineering

CERN – Year 13

Assessment

- Practical Endorsement –PASS/FAIL

- Fundamentals of Physics – multiple choice and short answers 41%
- Scientific Literacy in Physics – short answer and extended answer questions 37%
- Practical Skills in Physics – short and longer answer questions 22%



Course Structure - Year 1

- Theory (85%)
- Practical / Investigative Skills (15% + Practical Endorsement)

Module 3 – Physics in Action 25%

optics, image processing, electrical circuits, material properties

Module 4 Understanding Processes 25%

Waves, quantum behaviour, space, time & motion

Course Structure - Year 2

- Theory (85%)
- Practical / Investigative Skills (15% + Practical Endorsement)

<u>Module 5 – Clockwork Universe 25%</u>

radioactive decay, capacitors, simple harmonic motion, circular motion, gravitational fields, the universe and special relativity

<u>Module 4 Field and Particle Pictures 25%</u>

gas laws, kinetic model, thermodynamics, electrical and magnetic fields, particle physics, ionising radiation

Any Questions?

- Now
- Individually - me, students