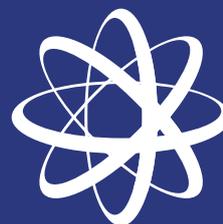


Macclesfield College



CURRICULUM

SCIENCE

YOUR
**NEXT
CHAPTER**

PRE-ENROLMENT PACK



A bit about the department



SCIENCE DEPARTMENT

The department offer science courses at level 3, 4 and 5. We are currently offer the following qualifications at level 3.

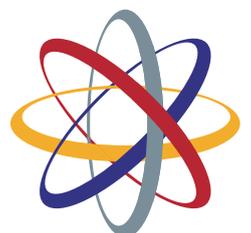
BTEC Level 3 National Foundation Diploma in Applied Science (on successful completion of Year 1)

BTEC Level 3 National Extended Diploma in Applied Science (Analytical and Forensic Science) (on successful completion of Year 2)

The staff within the department are qualified and experienced in their field and have a wealth of experience. We will work closely with you and the pastoral and progress tutors and offer a holistic approach to learning. We can offer extra support and guidance to ensure that you have the best experience of learning about science and it's applications in real life situations.

A high percentage of our students go onto university following our Level 3 courses. This year we have had students accepted onto courses for biomedical sciences and forensics, but on previous years students have also gone onto do more diverse courses such as law and film sound and lighting. We wish you every success during your time here with us and look forward to meeting you.

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The Staff

Ewan Douglas

Qualifications

BSc (Hons) Physiology

MSc Training

PGCE - Biology / PGCE - Chemistry

Background:

Ewan worked for a short time in medical research at UCL for a pharmaceutical company before working overseas for a number of years, returning to the UK in 2000 to start a career in teaching. He has spent many years teaching GCSE science as well as A Level Biology and Chemistry in secondary schools before joining the College in 2019. He has been an assessment advisor, moderator for AQA for many years and still examines on GCSE and A Level Biology papers.

Amy White

Lecturer

Qualifications

PGCE FE

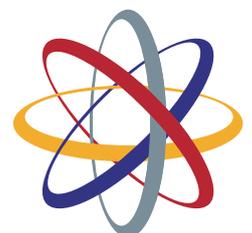
BSc (Hons) Forensic Science

Background:

Amy has been a lecturer in Science at Macclesfield College since 2006; and for part of this she was the Program leader for Science and Engineering. She has worked as a Standards Verifier and Examiner for Pearson for the BTEC Applied Science courses. She has completed various training modules throughout her time at Macclesfield College including collaborating on the creation of a toolkit of resources for Equality and Diversity; with Equality and Diversity UK Ltd.



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Where this course could take you

Completing a Science qualification at Level 3 can provide you with a wide range of opportunities within the industry. You are not limited and the more voluntary and work experience you get, the more options you will have.

Our courses offer a range of mandatory and optional modules. (4 of the mandatory units are assessed externally by way of small exams or assessments – the 9 other units are assessed internally through assignments). There is a good deal of practical work included in completing these units which means that you will leave with a wide knowledge of the scientific skills used in the science workplace.

Mandatory topics include:

- Principles and Applications of Science**
- Practical Scientific Procedures and Techniques**
- Science Investigation Skills**
- Laboratory Techniques and their Application**
- Contemporary Issues in Science**

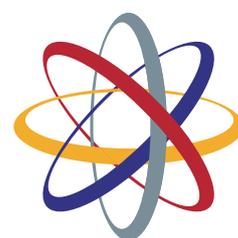
Optional topics currently include:

- Physiology of Human Body Systems**
- Applications of Organic Chemistry**
- Applications of Inorganic Chemistry**
- Forensic Evidence, Collection and Analysis**

The choice of units should enable students to apply for a wide variety of science-based courses as it provides the particular units which Universities look for when assessing applications for these courses. The units also offer the applied aspects of science which students enjoy in relation to forensics and crime investigation

You may decide to undertake an apprenticeship or degree apprenticeship. These courses can allow you to obtain a qualification by studying a part-time course and working alongside. There are a wide variety of apprenticeships available within this industry, such as healthcare, medical research industry and pharmaceuticals. Your tutors will work with you to find the progression pathway which is right for you.

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A task to get you started

“Following the science”

This has become a famous phrase used by Governments during the pandemic, but what is the science they are talking about behind COVID 19?

COVID 19 is a virus that can pass between people by passing in the air in droplets from an infected person or by direct contact with that person or a surface they have come into contact with. The longer and closer that contact the more likely the virus is to pass between two people. Epidemiology is the science that tries to model disease spread and comes up with ways of measuring and preventing the spread of a harmful pathogen.

The UK Government therefore had a number of choices of how to best deal with the COVID pandemic, but always stated that they would follow the science to help control the spread of the virus. Here are some if of their choices :-

Travel bans - to stop infected people getting into the country

Track and trace – to identify people who are infected and ask them to isolate to prevent them infecting others

Social distancing and mask wearing – to reduce the likelihood of people in public places passing on the virus

Lockdown – closure of businesses, schools and events where people are likely to come into close contact. Asking people to work from home and not travel outside their home area.

Have a look at some of the data on the next page.

The Task

Write a brief report for a science blog, giving your opinion on whether the UK Government did follow the science when trying to control the spread of the virus. Talk about the measures they introduced and compare them with other countries and the outcome in terms of cases and deaths in those countries. What could they have done differently based on the science of how a virus spreads.

Finally, contrast the opinions of scientists in different countries with what happened with the pandemic in different countries. Is there a link between how different countries acted and the opinion of the public as to how well they applied the scientific advice to the situation? Does it matter or not if Governments use good scientific advice?

Be prepared to bring along your article when you join us to start your course and we will discuss everyone’s ideas and try and conclude if the science was followed or not.





thebmj Visual summary

Covid-19 policy responses

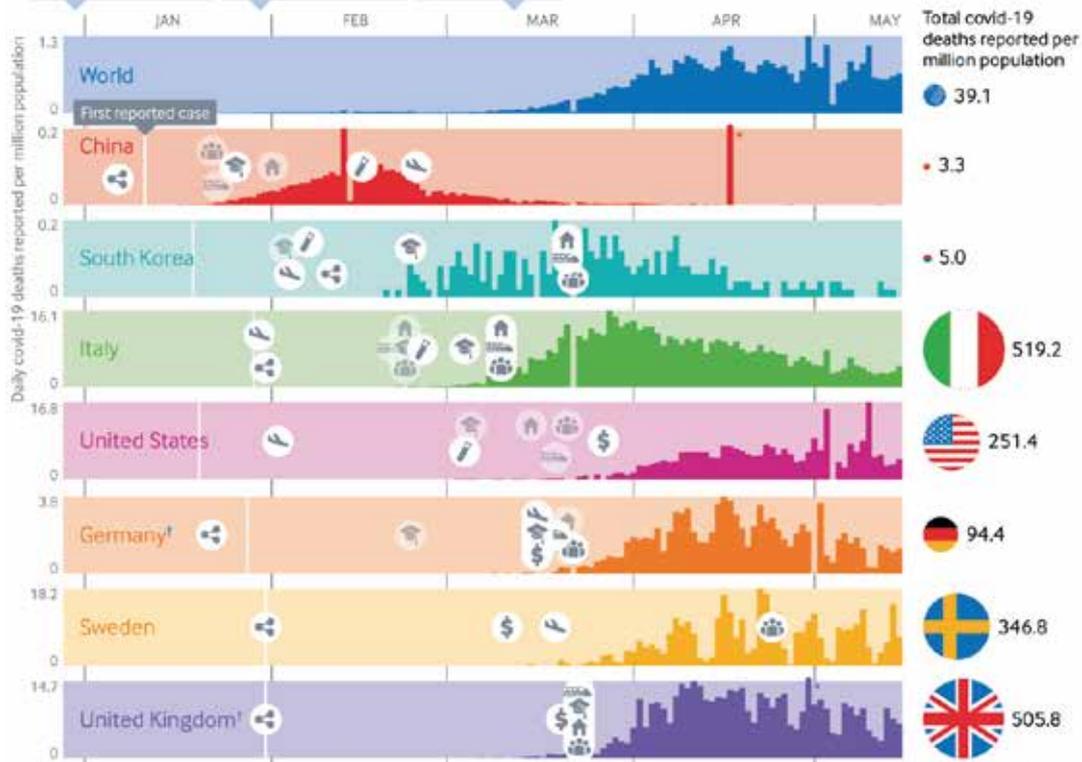
Governments around the world scrambled to mitigate the health and economic impacts of covid-19, with a wide variation in choice and timing of measures. The corresponding outbreaks in affluent countries are orders of magnitude more or less severe. The timings below indicate that the UK was slower to act than many countries, despite warnings from other regions and the World Health Organization (WHO).

Data from Blavatnik School of Government at Oxford University and WHO.

- 31 Dec 2019: Reports of pneumonia with unknown cause in China sent to WHO
- 30 Jan 2020: WHO declares "public health emergency of international concern"
- 11 Mar: WHO announces covid-19 as a pandemic

Government actions

National	Regional
Schools required to close	Internal movement: Closed or mostly prohibited
Gatherings limited to 100 people	International arrivals quarantined from high risk regions
Requirement to stay at home	Testing of anyone showing covid-19 symptoms
Economic support: >50% of lost salary	Comprehensive contact tracing for all cases



What next?
This graphic shows reported deaths, as the best available metric at this time. When future information on all cause mortality is available, it may give a clearer picture of the impacts of government policies

Data sources
<https://covid19.who.int/>
<https://data.worldbank.org/>
<https://www.bsg.ox.ac.uk/research/research-projects/coronavirus-government-response-tracker>

Key events:
 24 Jan: UK scientific advisory groups choose not to assess lockdown measures
 10 Feb: SARS-CoV-2 declared a serious and imminent threat to public health
 3 Mar: UK government publishes its four phase coronavirus "action plan"
 19 Mar: UK government downgrades covid-19, meaning that a lower level of PPE is required to treat patients
 25 Feb: UK government tells people returning from affected areas of Italy to self-isolate
 12 Mar: UK abandons contact tracing and moves to delay phase of action plan but rejects closing schools a day later

Version 2.17 19 May 2020

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* China and the UK recalculated their deaths, reporting large numbers attributed to a single day. These values are off the scales of these graphs, which are intended to show the overall shape and timing of an outbreak.

† Both Germany and the UK introduced testing in January, but not of everyone showing covid-19 symptoms. By March, Germany was testing 600 people per million population every day, compared with only 100 per million in the UK.

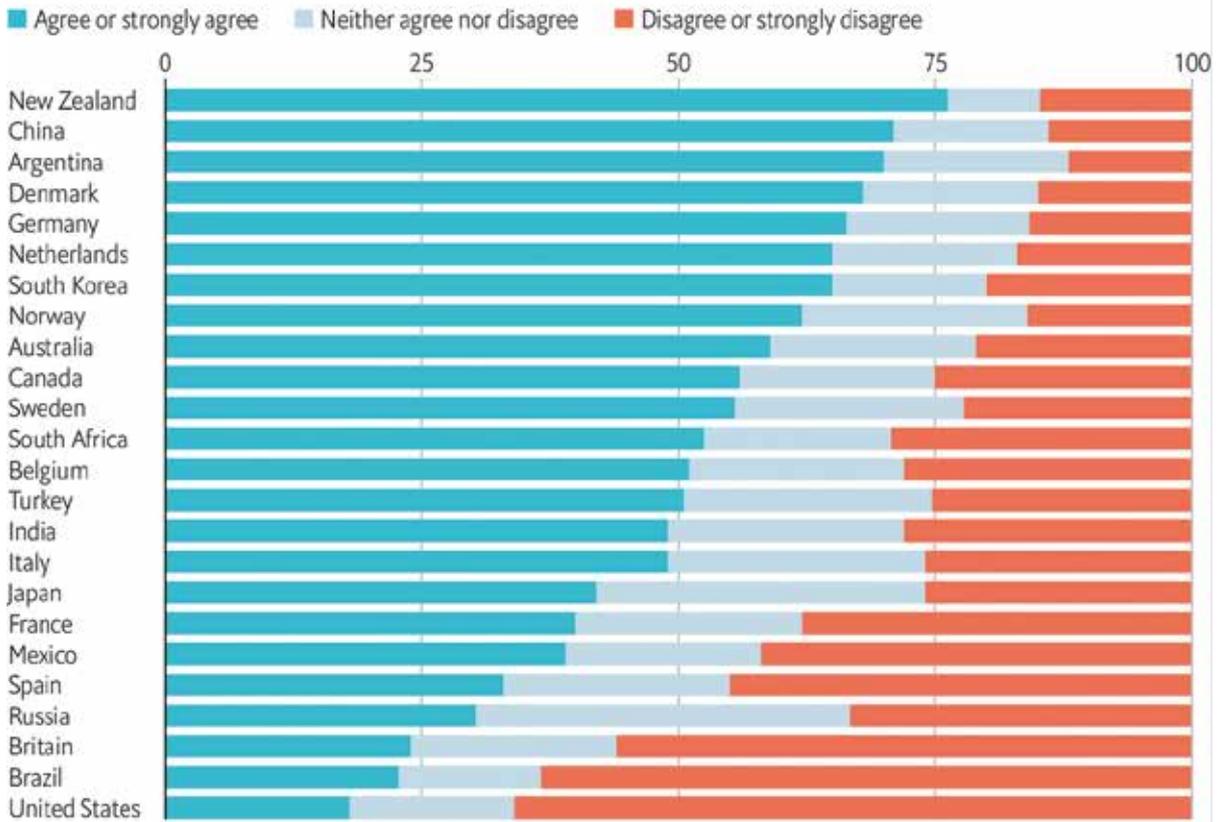
thebmj Read the full article online <https://bit.ly/BMJcv19ph>

See more visual summaries <http://www.bmj.com/infographics>



The scientific method?

Policymakers have taken scientific advice into account during covid-19, % responding
 Survey of each country's scientists*, May-June 2020



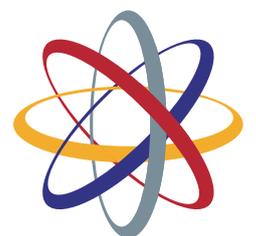
Source: Frontiers in Public Health

*25,307 researchers affiliated with Frontiers, a Swiss publisher of scientific journals

The Economist

Additional information – UK and US have higher rates of vaccination than Europe and other countries such as Singapore, Australia and New Zealand. US has had much less social distancing measures than UK or Europe or countries with much lower rates of infection and deaths like New Zealand, Singapore or Australia.

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Additional Resources

Some additional information about the course

Specification - Applied Science | Pearson qualifications
Course books - (Year 1) BTEC National Applied Science Student Book 1
Publisher: Pearson
Author: Joanne Hartley, Frances Annets, Chris Meunier, Roy Llewellyn, Sue Hocking, Alison Peers, Catherine Parmar ISBN: 9781292134093

(Year 2) BTEC Level 3 Nationals Applied Science
Student Book 2
Author Frances Annets
Publisher Pearson Education Limited, 2016 ISBN 1292134100, 9781292134109

Some useful videos about the course and how it runs:-

BTEC Applied Science Level 3 qualifications explained - BioTeach. - YouTube (1st year qualifies for National Foundation Diploma, 2nd Year is National Extended Diploma)

BTEC Level 3 Applied Science Rules and Grading - Bioteach - YouTube (

BTEC Applied Science Level 3 Organisation Tips and Ideas - BioTeach - YouTube (getting yourself organised)

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