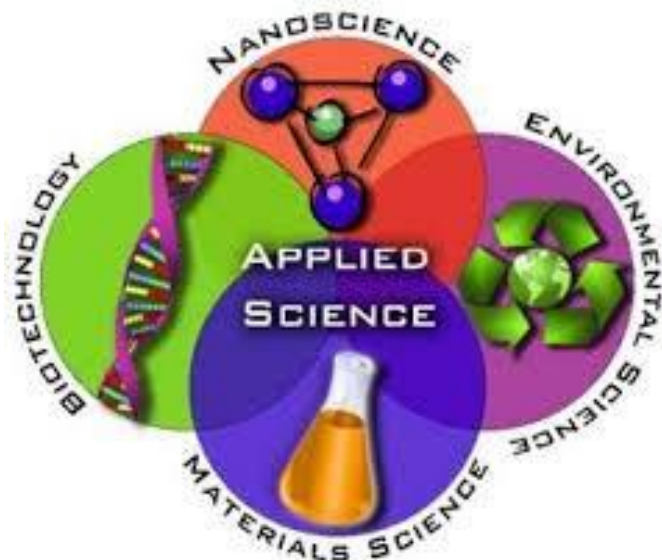


Ormiston Bolingbroke Academy



Applied Science Transition Pack



Over the duration of the Summer Holiday, you have a series of tasks to complete to ensure you are ready to start the Applied Science units equipped with the necessary skills to complete the 2 year course...

It would be best to have these saved as an electronic document (word or powerpoint) but don't worry if not, written work will be fine too!

- Task 1 (30 mins) – Familiarise yourself with the scenario. Answer the 2 quick questions as a written paragraph.
- Task 2 (30 mins) – Pick 6 pieces of equipment from the list that you are unsure of and complete the table.
 - Task 3 (2 hours) – Complete the practices and procedures table.
- **Task 4 (2 hours) Additional work for Applied Science (Double) Diploma students ONLY – Public perceptions of Science Report.**

See you in September!

So you are considering Applied Science(Single/Double)?

This pack contains a programme of activities and resources to prepare you to start your qualification in Applied Science in September. It is aimed to be used after you complete your GCSEs, throughout the remainder of the Summer term and over the Summer Holidays to ensure you are ready to start your course in September.



Movie Recommendations

If you have 30 minutes to spare, here are some great presentations (and free!) from world leading scientists and researchers on a variety of topics. They provide some interesting answers and ask some thought-provoking questions. Use the link or scan the QR code to view:

A New Superweapon in the Fight Against Cancer

Available at :

http://www.ted.com/talks/paula_hammond_a_new_superweapon_in_the_fight_against_cancer?language=en

Cancer is a very clever, adaptable disease. To defeat it, says medical researcher and educator Paula Hammond, we need a new and powerful mode of attack.



Why Bees are Disappearing

Available at :

http://www.ted.com/talks/marla_spivak_why_bees_are_disappearing?language=en

Honeybees have thrived for 50 million years, each colony 40 to 50,000 individuals coordinated in amazing harmony. So why, seven years ago, did colonies start dying en-masse?

Why Doctors Don't Know About the Drugs They Prescribe

Available at :

http://www.ted.com/talks/ben_goldacre_what_doctors_don_t_know_about_the_drugs_they_prescribe?language=en

When a new drug gets tested, the results of the trials should be published for the rest of the medical world — except much of the time, negative or inconclusive findings go unreported, leaving doctors and researchers in the dark.



Growing New Organs

Available at :

http://www.ted.com/talks/anthony_atalla_growing_organs_engineering_tissue?language=en

Anthony Atalla's state-of-the-art lab grows human organs — from muscles to blood vessels to bladders, and more.

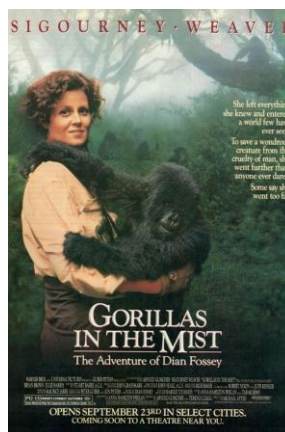
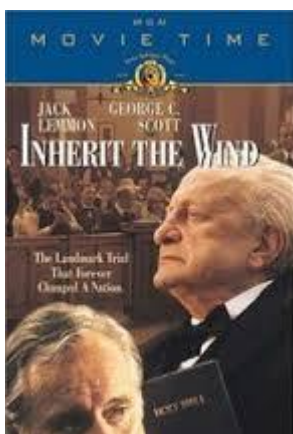
Movie Recommendations

Everyone loves a good story and everyone loves some great science. Here are some of the picks of the best films based on real life scientists and discoveries. You won't find Jurassic Park on this list, we've looked back over the last 50 years to give you our top 5 films you might not have seen before. Great watching for a rainy day.



Inherit The Wind (1960)

Great if you can find it. Based on a real life trial of a teacher accused of the crime of teaching Darwinian evolution in school in America. Does the debate rumble on today?

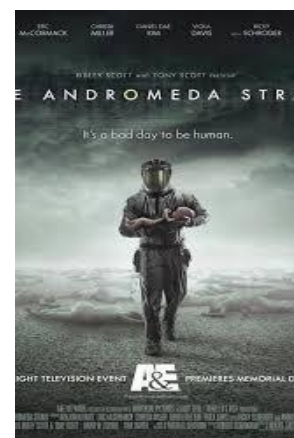


Gorillas in the Mist (1988)

An absolute classic that retells the true story of the life and work of Dian Fossey and her work studying and protecting mountain gorillas from poachers and habitat loss. A tear jerker.

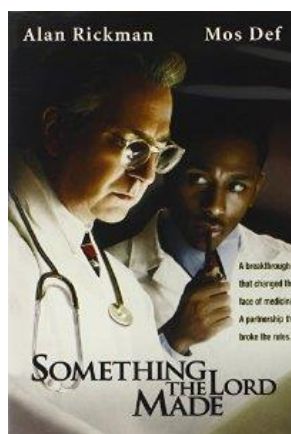
Andromeda Strain (1971)

Science fiction by the great thriller writer Michael Crichton (he of Jurassic Park fame). Humans begin dying when an alien microbe arrives on Earth.



Lorenzo's Oil (1992)

Based on a true story. A young child suffers from an autoimmune disease. The parents research and challenge doctors to develop a new cure for his disease.



Something the Lord Made (2004)

Professor Snape (the late great Alan Rickman) in a very different role. The film tells the story of the scientists at the cutting edge of early heart surgery as well as issues surrounding racism at the time.

There are some great TV series and box sets available too, you might want to check out: Blue Planet, Planet Earth, The Ascent of Man, Catastrophe, Frozen Planet, Life Story, The Hunt and Monsoon.

Applied Science (Single) – Subsidiary Diploma

Task 1: Read the scenario below and answer the questions in one paragraph on a separate page...(30 minutes)


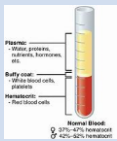
“You work in publicity for a scientific company and are currently organising a pack to be sent out to prospective science technicians(this includes all lab workers). Your pack will include a table into the procedures followed in the science Industry so potential technicians have an insight into the work involved. You also need to write a leaflet into communication within the workplace so these potential candidates can identify whether they have the correct skill set to cope with the demands of the job!”

- 1) What are the roles of science technicians?
- 2) What skills would they need to have to be good at their job?

Task 2 : Out of the following pieces of equipment (30 minutes)

- Centrifuge
- Microscope
- pH meter
- Oven
- Incubator
- Fume cupboard
- Graduated pipette
- Heating mantle
- Burette
- Bunsen burner
- Desiccator
- Oscilloscope

Pick 6 that you are unfamiliar with and complete a table using the following headings for example...

Piece of equipment	Use	Example practical/experiments that would require this piece of equipment...
Centrifuge	<p>This piece of equipment often looks like this...</p>  <p>It is used to separate solids and liquids by intense spinning and separates based on density.</p>	<p>When separating blood into its individual components. Depending on their density the components separate out e.g.</p> 

Applied Science (Single) – Subsidiary Diploma

Task 3: (2 hours)

Produce a table or a power point into the procedures followed by a science technician in the work place.

You shouldn't just list these procedures. You need to have a think about why each of these procedures and practices is carried out so make sure you understand what each one is first!

1. Knowledge of equipment
2. Handling of materials
3. Store management, e.g. chemical, biological
4. Ordering procedures
5. Calibration of equipment, e.g. pH meters, graduated pipettes
6. Maintaining equipment, e.g. burettes and Bunsen burners
7. Collection/transport of substances and equipment for disposal
8. Use of centrifuges
9. Instrumentation techniques, e.g. colorimeter, electrophoresis
10. Desiccators and vacuum storage
11. Handling and disposal of radioactive substances
12. Handling and use of glassware
13. Handling of solvents and poisons
14. Use of ovens
15. Operation of the fume cupboard
16. Transfer of materials
17. Carrying out tests

You can set your workout using a table like the one below...

Procedure	Explain why procedures and practices are followed I the scientific workplace	References used (keep a list of websites/books used to find out this information).
1. Knowledge of equipment		
2. Handling materials		
3. Etc...		

Applied Science (Double) –Diploma

ONLY COMPLETE THIS TASK IF YOU ARE DOWN TO STUDY THE DOUBLE AWARD APPLIED SCIENCE COURSE.

Task 4: (2 hours)

Choose a well known scientific article, film or documentary, dating back no more than 10 years, highlighting how it was perceived by the public.

Explain how this was influenced by the media.

Have a think about your audience - Do they believe the article, film or documentary or not – and why.

EXAMPLES - Perceptions of science:

Film and television series, eg science documentaries, science docu-fiction

Science 'scare' stories, eg MMR vaccine

Exploiting public fears, eg rapid spread of viruses, DNA collection for government database

Your report should take the form of a well structured essay of approx. 2 pages in length.

It could follow a structure similar to this below:

Paragraph 1 – An overview of the documentary – what were the key themes? What stood out as interesting?

Paragraph 2 – How was this documentary perceived/viewed by yourself? By others? What differing opinions may people have had on it? Did it spark any other areas of discussion?

Paragraph 3 – Are there any other videos/documentaries produced as a result of this one? Explain how this documentary was influenced by the media.

Paragraph 4 – Conclusions – key take-away's from the documentary.