

## Tavistock College Sixth Form

When you sign up for a subject please note that you will be expected to study that subject for the whole two years. There will be a formal assessment in the Autumn term, after four weeks and that is the only time when students will be allowed to swap or change subjects. After this, too much will have been missed.

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| <b>Subject:</b><br>Chemistry   |  | <b>Qualification:</b><br>A-level   |  |
| <b>Exam board:</b><br>OCR<br>Spec OCR A Chemistry  |  | <b>Entrance criteria:</b><br>Grade 6-6 in double Science or grade 6 in Chemistry<br>Grade 6 in Maths |  |
| <b>Topics covered:</b><br><br>Foundations in Chemistry<br>Periodic Table and Energy<br>Core and Further Organic Chemistry and Analysis<br>Physical Chemistry and Transition Metals   |  |  |  |
| <b>How the subject will be taught:</b><br><br>You will have 2 teachers who will be covering 2 separate modules at a time. Lessons will follow a similar pattern that includes problem solving, teacher input, modelling and application through challenging questions. There is a heavy practical involvement with 12 core practical's being covered and considerably more used for teaching and understanding purposes. Practical activity should account for between 10-20% of the time. You will be assessed regularly with a range of assessment from continuous low stakes quizzing, exam questions, module summary assessments / End Point Tasks and large exam style papers. Math plays a large part in Chemistry, primarily focusing around a key set of skills and equations which then need to be applied to a range of circumstances and mathematical problem solving will play a large role in lessons and assessments. 30% of the course is Mathematically based. However, academic literacy is important and quality of scientific writing is key to achieving top grades. |  |  |  |
| <b>Expectations of students:</b><br><br>Students are expected to match their hours of contact time with self-study. During this self-study they are expected to; complete directed reading in preparation for the next lesson/module, complete a summary/review of class notes and keep an up to date folder, complete set exam questions or end of section questions from the textbook, complete laboratory experiment write ups/review questions and undertake a continuous self-review and revise schedule. All homework and end point tasks are expected on time and students are expected to review and evaluate their own learning. It is also expected that students will have high aspirations, expectations and resilience and will develop their wider knowledge by reading around the subject from articles blogs / documentaries.  |  |  |  |

## Summer work:

### The Unluckiest Genius of All Time?

*"Thomas Midgley, Jr. (May 18, 1889 – November 2, 1944) was an American [mechanical engineer](#) and [chemist](#). He was a key figure in a team of chemists, led by [Charles F. Kettering](#), that developed the [tetraethyllead](#) (TEL) additive to [gasoline](#) as well as some of the first [chlorofluorocarbons](#)(CFCs). Over the course of his career, Midgley was granted over a hundred [patents](#). While he was lauded for his scientific contributions during his lifetime, the [negative environmental impact](#) of some of his innovations have considerably tarnished his legacy."*

[http://en.wikipedia.org/wiki/Thomas\\_Midgley,\\_Jr](http://en.wikipedia.org/wiki/Thomas_Midgley,_Jr).

**TASK** - You should write an essay exploring the impact that Thomas Midgley had on the environment including the Chemistry behind how these inventions damaged the environment. The second part of your essay should focus on how these impacts are now being reduced, with a specific look at how fuel is now developed so it does not "knock".

Success Criteria:

- Word count: approx. 2000
- Full list of references and bibliography
- Should include a full explanation of how CFCs destroy the ozone layer
- A full description of octane number and auto-ignition, as well as an explanation of Tetra Ethyl Leads uses and affects.

*It would also be pertinent to do some reading around the subject to gauge your deeper interest and inspire some key questions. While I would not advocate buying books before the course has fully started and entry/continuation guaranteed, if you could borrow or use a library, reading either of the following books are a great introductory to the world of Science past GCSE.*

*Bill Bryson – A Short History of Nearly Everything*

*Sam Kean - The Disappearing Spoon: And Other True Tales of Madness, Love, and the History of the World from the Periodic Table of the Elements*

(It is important for you to bring your completed summer work with you on enrollment day, and hand it into the subject lead or head of faculty.)