

DOVER HIGH SCHOOL HONORS CHEMISTRY – SUMMER COURSE WORK – 2017-2018

As an Honors Chemistry student you will be required to complete a summer assignment. PART I will largely be review of material you have already learned in Physical Science and will be part of your first quarter grade. PART II is an oral presentation that will be graded in the quarter presented, depending on the topic chosen.

****** BOTH PARTS WILL BE COLLECTED ON THE FIRST DAY OF CLASS! ******

PART I: Textbook Practice – complete on loose leaf paper.

As an Honors candidate, you will be given a chemistry text book and will keep it for the entire year. The majority of the answers to PART I will be in the text book. If answers require additional resources, please be sure to **cite properly**.

- **Read Chapter 1;** answer Chapter Review questions **22-30, 34-37** (pages 32-33).
- **Read Chapter 2;** answer Chapter Review questions **20-34, 45-48, 49, 53-55** (pages 67-69).
- **Read Chapter 3;** answer Chapter Review questions **42-47, 48-63** (pages 108-109).

PART II: Oral Presentation – Choose ONE of the following three project categories **BY JUNE 20:**

NOTE: SEE ATTACHED RUBRIC. Oral presentation should be practiced for length. If you do a powerpoint presentation, slides must be for reference and illustration **ONLY** (**no text** – ALL CONTENT MUST COME FROM YOUR ORAL PRESENTATION). No video links allowed unless they are your OWN ORIGINAL WORK. If you have trouble with the 10 minute requirement, look for creative ways to illustrate your topic with an interactive piece, a demonstration, a real-life example, etc. **All references must be properly cited.**
EVIDENCE OF YOUR WORK (POWERPOINT, NOTES, OUTLINE, ETC.) DUE FIRST CLASS.

CHOICE #1: Pick a topic from the following list to create a **10 minute oral presentation:**

atomic structure
electron configuration
chemistry laws (conservation of mass, conservation of energy, definite proportions, def. composition, etc.)
periodic trends
periodic table
scientific method
variables & controls
dimensional analysis
density
phase changes/states of matter
physical/chemical changes
compounds (ionic, covalent, metallic, etc.)
types of reactions (synthesis, decomposition, single replacement, double replacement, combustion, neutralization, oxidation-reduction)
atomic theory
nuclear reaction vs. chemical reaction
acids & bases
natural elements vs. man-made elements
rare earth metals
carbon & organic compounds (alkane, alkenes, alkynes, alcohols, carboxylic acids, etc.)
quantum mechanical model/theory
electromagnetic radiation

CHOICE #2: Read a **chemistry-related** book (to be obtained by you). Create a **10 minute oral presentation** that covers what it was about, what you learned/found interesting, etc. **EMPHASIS MUST BE ON THE CHEMISTRY.**

- Caesar's Last Breath: Decoding the Secrets of the Air Around Us; Sam Kean (**due out July 18, 2017**)
- The Periodic Kingdom; Peter Atkins
- The Day We Found the Universe; Marcia Bartusiak
- Twinkie, Deconstructed; Steve Ettlinger
- Napoleon's Buttons; Penny Le Couteur, Jay Burreson
- The Chemical History of a Candle; Michael Faraday
- Cradle to Cradle; William McDonough, Michael Braungart
- An Apple A Day: The Myths, Misconceptions, and Truths About the Foods We Eat; Joe Schwarcz
- How We Got to Now: Six Innovations That Made the Modern World; Steven Johnson
- Culinary Reactions: The Everyday Chemistry of Cooking; Simon Quellen Field
- The Chemistry of Plants: Perfumes, Pigments and Poisons; Margareta Sequin
- Reactions: The Private Life of Atoms; Peter Atkins
- Atkins' Molecules; Peter Atkins
- The Genie in the Bottle: 67 All-New Commentaries on the Fascinating Chemistry of Everyday Life; Joe Schwarcz
- Seven Elements that Changed the World; John Browne
- A Tale of 7 Elements; Eric Scerri
- The Disappearing Spoon: And Other True Tales of Madness, Love, and the History of the World from the Periodic Table of the Elements; Sam Kean
- Periodic Table: Elements with Style; Simon Basher and Adrian Dingle
- Stuff Matters: Exploring the Marvelous Materials That Shape Our Man-Made World; Mark Miodownik
- Uncle Tungsten: Memories of a Chemical Boyhood; Oliver Sacks
- The Periodic Table: A Very Short Introduction, Eric Scerri
- Quantum Theory: A Very Short Introduction; John Polkinghorne
- The Laws of Thermodynamics: A Very Short Introduction; Peter Atkins
- Wicked Plants: The Weed That Killed Lincoln's Mother and Other Botanical Atrocities; Amy Stewart
- or, one of your own choice (**MUST get approval from one of the teachers above via email**).

CHOICE #3: Create a **10 minute oral presentation** that answers a chemistry-related question that you have wondered about. This requires a retelling of your entire journey to enlightenment starting from your question and why it came to you, to your search for answers and the story of the chemistry that explains the phenomenon.

Examples might include: (though the best topic would be one of your **own!**)

Why is yellow dye banned in Europe and Australia, but not in the U.S.?

Why does caffeine act as a stimulant?

How does phenolphthalein (phth) work?

These may seem like simple questions to answer, so your task as an Honors student is to “flesh-out” the story in the way a John McPhee, or a Malcolm Gladwell, or a Sam Kean might when they take on a seemingly mundane topic to investigate (i.e. the second example has plenty of room for investigation in the biochemical arena of how plants manufacture chemicals and for what reason(s)).

If you have any questions during the summer on the above assignments, please e-mail Mr. Seekamp; I will be checking my e-mail throughout the summer.

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