**Science Enrichment by Course**

for March 23 - April 03

**Biology:**

Time Recommendation: 30 minutes per day

Mon. 3/23: Khan Academy: Cell Division: Cell Cycle and Mitosis

1. [Interphase Video](https://www.khanacademy.org/science/biology/cellular-molecular-biology/mitosis/v/interphase?modal=1)
2. [Phases of the Cell Cycle Reading](https://www.khanacademy.org/science/biology/cellular-molecular-biology/mitosis/a/cell-cycle-phases?modal=1)

Tues. 3/24: Khan Academy: Cell Division: Cell Cycle and Mitosis

1. [Mitosis Video](https://www.khanacademy.org/science/biology/cellular-molecular-biology/mitosis/v/mitosis?modal=1)
2. [Phases of Mitosis Reading](https://www.khanacademy.org/science/biology/cellular-molecular-biology/mitosis/a/phases-of-mitosis?modal=1)

Wed. 3/25: Khan Academy: Cell Division: Meiosis

1. [Comparing Mitosis & Meiosis Video](https://www.khanacademy.org/science/biology/cellular-molecular-biology/meiosis/v/comparing-mitosis-and-meiosis?modal=1)
2. [Meiosis Reading](https://www.khanacademy.org/science/biology/cellular-molecular-biology/meiosis/a/phases-of-meiosis?modal=1)

Thurs. 3/26: Khan Academy: Cell Division: Meiosis:

1. [Chromosomal Crossover in Meiosis 1 Video](https://www.khanacademy.org/science/biology/cellular-molecular-biology/meiosis/v/chromosomal-crossover-in-meiosis-i?modal=1)
2. [Phases of meiosis 1 Video](https://www.khanacademy.org/science/biology/cellular-molecular-biology/meiosis/v/phases-of-meiosis-i?modal=1)

Fri. 3/27: Khan Academy: Cell Division: Meiosis / Cell Cycle Regulation, and Cancer:

1. [Phases of meiosis 2 Video](https://www.khanacademy.org/science/biology/cellular-molecular-biology/meiosis/v/phases-of-meiosis-ii?modal=1)
2. [Cell Cycle Checkpoints Reading](https://www.khanacademy.org/science/biology/cellular-molecular-biology/stem-cells-and-cancer/a/cell-cycle-checkpoints-article?modal=1)

Mon. 3/30: Khan Academy: Cell Cycle Regulation, and Cancer:

1. [Cancer Video](https://www.khanacademy.org/science/biology/cellular-molecular-biology/stem-cells-and-cancer/v/cancer?modal=1)
2. [Cancer and the Cell Cycle Reading](https://www.khanacademy.org/science/biology/cellular-molecular-biology/stem-cells-and-cancer/a/cancer?modal=1)

Tues. 3/31: Khan Academy: Cell Cycle Regulation, and Cancer:

1. [Apoptosis Video](https://www.khanacademy.org/science/biology/cellular-molecular-biology/stem-cells-and-cancer/v/apoptosis?modal=1)
2. [Apoptosis Reading](https://www.khanacademy.org/science/biology/cellular-molecular-biology/stem-cells-and-cancer/a/apoptosis?modal=1)

Wed. 4/1: Khan Academy: DNA Replication:

1. [DNA replication and RNA transcription and translation Video](https://www.khanacademy.org/science/biology/gene-expression-central-dogma/translation-polypeptides/v/rna-transcription-and-translation)
2. [Molecular Structure of DNA Video](https://www.khanacademy.org/science/biology/dna-as-the-genetic-material/dna-replication/v/molecular-structure-of-dna?modal=1)

Thurs. 4/2: Khan Academy: Transcription:

1. [Transcription and RNA Processing Video](https://www.khanacademy.org/science/biology/gene-expression-central-dogma/transcription-of-dna-into-rna/v/transcription-and-mrna-processing)
2. [Overview of Transcription Reading](https://www.khanacademy.org/science/biology/gene-expression-central-dogma/transcription-of-dna-into-rna/a/overview-of-transcription)

Fri: 4/3: Khan Academy: Translation:

1. [Translation (mRNA to Protein) Video](https://www.khanacademy.org/science/biology/gene-expression-central-dogma/translation-polypeptides/v/translation-mrna-to-protein)
2. [Overview of Translation Reading](https://www.khanacademy.org/science/biology/gene-expression-central-dogma/translation-polypeptides/a/translation-overview)

**Chemistry/Physics Essentials:**

Time recommendation: 35-45 minutes daily, depending on your pace

Week 1 | 03/23-03/27: 120 minutes of video, plus lessons, practice and quiz for self-assessment purposes

One-Dimensional Motion

* [Introduction to physics](https://www.khanacademy.org/science/physics/one-dimensional-motion/introduction-to-physics-tutorial/v/introduction-to-physics)
* [Displacement, velocity, and time](https://www.khanacademy.org/science/physics/one-dimensional-motion/displacement-velocity-time/v/introduction-to-vectors-and-scalars)
* [Acceleration](https://www.khanacademy.org/science/physics/one-dimensional-motion/acceleration-tutorial/v/acceleration)
* [Quiz 1](https://www.khanacademy.org/science/physics/one-dimensional-motion/quiz/one-dimensional-motion-quiz-1?modal=1)

Week 2 | 03/30-04/03: 118 minutes of video, plus lessons, practice and quiz for self-assessment purposes

* [Newton's laws of motion](https://www.khanacademy.org/science/physics/forces-newtons-laws/newtons-laws-of-motion/v/newton-s-1st-law-of-motion) (including practice problems)
* [Quiz](https://www.khanacademy.org/science/physics/forces-newtons-laws/quiz/forces-newtons-laws-quiz-1?modal=1) (Newton's Laws)
* [Normal force and contact force](https://www.khanacademy.org/science/physics/forces-newtons-laws/normal-contact-force/v/normal-force-and-contact-force)
* [Balanced and unbalanced forces](https://www.khanacademy.org/science/physics/forces-newtons-laws/balanced-unbalanced-forces/v/balanced-and-unbalanced-forces)

**Physics & ADV Physics:**

Time recommendation: 40-45 minutes daily, depending on your pace

Please work in [positivePhysics.org](http://positivePhysics.org) on “Extra Practice” and “Assessments” (for self-evaluation purposes; not grades for PowerSchool use).  They are unlocked and available for Units 1-6, and Unit 12 (momentum).   This will provide a great review of work we have done thus far this year.

To review topics (and possibly even for occasional entertainment), I recommend virtually visiting our friends at [Flipping Physics](https://www.flippingphysics.com/for-teachers.html) (scroll down toward bottom to "Anchor Points” list).  While some of the videos will go a little more in depth that we did, the videos are great refreshers and will likely strengthen the understanding developed earlier this year.

Additionally, time can be spent in [Khan Academy: Physics](https://www.khanacademy.org/science/physics) on topics we have covered so far this year (1D motion, 2D motion, Forces, Momentum)

**Forensic Science:**

Time recommendation: 30 minutes daily

Please explore the resources and simulated investigations on the [CSI: Web Adventures](http://forensics.rice.edu/) site, the [CHIN Interactive Investigation](http://www.virtualmuseum.ca/sgc-cms/expositions-exhibitions/detective-investigator/en/index.html) site, and the [Forensic Science Spot](https://sciencespot.net/Pages/classforsci.html) site. Focus on topic we have covered thus far this year.

**Environmental Science**

Week #1

30 minutes a day

March 23 – March 27

<https://www.youtube.com/playlist?list=PLACD8E92715335CB2>

<https://youtu.be/RnvCbquYeIM>

<https://youtu.be/0rt9d_0nlwI>

<https://youtu.be/og2H7ZxkiMA>

Week #2

30 minutes a day

March 30 – April 3

<https://youtu.be/Q7WiUltNxuc>

<https://youtu.be/_Z367m_JFPU>

<https://waterfootprint.org/en/resources/interactive-tools/personal-water-footprint-calculator/>

<https://waterfootprint.org/en/resources/interactive-tools/personal-water-footprint-calculator/personal-calculator-extended/>

Investigate how you can improve your water footprint.  Come up with a top 10 list.

**Marine Science**

Week #1

30 minutes per day

March 23 – March 27

<https://youtu.be/JcDDzOID960>

<https://youtu.be/mHEjDl6VFsM> (fast forward to key points of experiment)

<https://youtu.be/RLmKfXwWQtE>

<https://youtu.be/0Iyr_rCw2qc>

<https://youtu.be/E8dkWQVFAoA>

Week #2

30 minutes a day

March 30 – April 3

RESEARCH an animal different from the one you picked in class and simply create a word document of the information requested below.

Lesson 15 Endangered Species Research Assignment

While habitats in the United States support much biodiversity, many species of plants and animals are endangered.  Your task is to prepare a poster and presentation introducing others to a specific endangered species.  The audience for your presentation is the general public.

Start by using: <https://www.worldwildlife.org/species-categories/marine-animals/species/directory?sort=extinction_status&direction=asc>

Be sure to include:

1. Name and description of your species
2. Scientific name of your species
3. Description of where and how scientists are studying your species
4. Why your species is important to its ecosystem
5. Pictures of your species
6. Habitat description, niche description
7. Range of the species colored in on a map and described in words
8. Human induced factors that contribute to the species’ vulnerability to extinction
9. Natural factors that contribute to the species’ vulnerability to extinction
10. Extinction status (endangered, vulnerable etc)
11. What can be done to protect your species in order to reverse its endangered status?

1.           Sea Turtle

2.           Vaquita

3.           Whale Shark

4.           Dugong

5.           Humphead Wrasse

6.           Whale

7.           Sea Lions

8.           Marine Iguana

9.           Tuna

10.         Bluefin Tuna

11.         Yellowfin Tuna

12.         Hawksbill Turtle

13.         Great White Shark

14.         Loggerhead Turtle

15.         Leatherback Turtle

16.         Green Turtle

17.         Olive Ridley Turtle

18.         Albacore Tuna

19.         Bigeye Tuna

20.        North Atlantic Right Whale

21.         Blue Whale

22.         Fin Whale

23.         Bowhead Whale

24.         Gray Whale

25.         Hector's Dolphin

26.         Galápagos Penguin

27.         Polar Bear

28.         Narwhal

29.         Beluga

**Chemistry:**

Spend about 30 mins on the assignments listed. (At the end of the readings are some practice problems that you can do.)

3/23  Khan Academy Naming Ions and Naming reading

1. [Naming Ions](https://www.khanacademy.org/science/chemistry/atomic-structure-and-properties/names-and-formulas-of-ionic-compounds/v/naming-ions-and-ionic-compounds)
2. [Naming Ions Readings](https://www.khanacademy.org/science/chemistry/atomic-structure-and-properties/names-and-formulas-of-ionic-compounds/a/naming-monatomic-ions-and-ionic-compounds)

3/24  Khan Academy Polyatomic naming and structures

1. [Common Polyatomics](https://www.khanacademy.org/science/chemistry/atomic-structure-and-properties/names-and-formulas-of-ionic-compounds/v/common-polyatomic-ions)
2. [Polyatomic Reading](https://www.khanacademy.org/science/chemistry/atomic-structure-and-properties/names-and-formulas-of-ionic-compounds/a/polyatomic-ions)
3. [Naming Ionic Polyatomic](https://www.khanacademy.org/science/chemistry/atomic-structure-and-properties/names-and-formulas-of-ionic-compounds/v/naming-ionic-compound-with-polyvalent-ion)

3/25  Khan Academy.  Practice Quizzes.  Please do each one at least 3 times.

1. [Practice #1](https://www.khanacademy.org/science/chemistry/atomic-structure-and-properties/names-and-formulas-of-ionic-compounds/e/predict-charges-on-monatomic-ions)
2. [Practice #2](https://www.khanacademy.org/science/chemistry/atomic-structure-and-properties/names-and-formulas-of-ionic-compounds/e/naming-ionic-compounds)
3. [Practice #3](https://www.khanacademy.org/science/chemistry/atomic-structure-and-properties/names-and-formulas-of-ionic-compounds/e/find-the-formula-for-ionic-compounds)

3/26 and 3/27:  Work on the following [naming and formula packet](https://documentcloud.adobe.com/link/track?uri=urn%3Aaaid%3Ascds%3AUS%3A05c935fd-231d-4ee5-98cd-7fae1d454197)

3/30 and 3/31 [Naming Ionic Compound Pogil](https://documentcloud.adobe.com/link/track?uri=urn%3Aaaid%3Ascds%3AUS%3Af0a1a31c-832c-4fcd-bb92-b1b5550910ea)

4/1 and 4/3 [Polyatomic Ion Pogil](https://documentcloud.adobe.com/link/track?uri=urn%3Aaaid%3Ascds%3AUS%3Ae3440296-f526-4ba2-831a-6305d92d53a7)

4/3  [Covalent Bond Naming Packet](https://documentcloud.adobe.com/link/track?uri=urn%3Aaaid%3Ascds%3AUS%3Aa5fc629a-136f-4ff6-a408-aa99bee101d5)

**Advanced Chemistry:**

Spend about 30 mins each day on the assignments. (At the end of the readings are some practice problems that you can do.)

3/23  Khan Academy Naming Ions and Naming reading

1. [Naming Ions](https://www.khanacademy.org/science/chemistry/atomic-structure-and-properties/names-and-formulas-of-ionic-compounds/v/naming-ions-and-ionic-compounds)
2. [Naming Ions Readings](https://www.khanacademy.org/science/chemistry/atomic-structure-and-properties/names-and-formulas-of-ionic-compounds/a/naming-monatomic-ions-and-ionic-compounds)

3/24  Khan Academy Polyatomic naming and structures

1. [Common Polyatomics](https://www.khanacademy.org/science/chemistry/atomic-structure-and-properties/names-and-formulas-of-ionic-compounds/v/common-polyatomic-ions)
2. [Polyatomic Reading](https://www.khanacademy.org/science/chemistry/atomic-structure-and-properties/names-and-formulas-of-ionic-compounds/a/polyatomic-ions)
3. [Naming Ionic Polyatomic](https://www.khanacademy.org/science/chemistry/atomic-structure-and-properties/names-and-formulas-of-ionic-compounds/v/naming-ionic-compound-with-polyvalent-ion)

3/25  Khan Academy.  Practice Quizzes.  Please do each one at least 3 times.

1. [Practice #1](https://www.khanacademy.org/science/chemistry/atomic-structure-and-properties/names-and-formulas-of-ionic-compounds/e/predict-charges-on-monatomic-ions)
2. [Practice #2](https://www.khanacademy.org/science/chemistry/atomic-structure-and-properties/names-and-formulas-of-ionic-compounds/e/naming-ionic-compounds)
3. [Practice #3](https://www.khanacademy.org/science/chemistry/atomic-structure-and-properties/names-and-formulas-of-ionic-compounds/e/find-the-formula-for-ionic-compounds)

3/26 and 3/27:  Work on the following [naming and formula packet](https://documentcloud.adobe.com/link/track?uri=urn%3Aaaid%3Ascds%3AUS%3A05c935fd-231d-4ee5-98cd-7fae1d454197)

3/30 Khan Academy IMF Videos

1. [London Dispersion Forces](https://www.khanacademy.org/science/chemistry/ap-chemistry/states-of-matter-and-intermolecular-forces-ap/introduction-to-intermolecular-forces-ap/v/london-dispersion-forces)
2. [Dipole – Dipole Forces](https://www.khanacademy.org/science/chemistry/ap-chemistry/states-of-matter-and-intermolecular-forces-ap/introduction-to-intermolecular-forces-ap/v/dipole-dipole-forces)
3. [Hydrogen Bonding Forces](https://www.khanacademy.org/science/chemistry/ap-chemistry/states-of-matter-and-intermolecular-forces-ap/introduction-to-intermolecular-forces-ap/v/hydrogen-bonding)

3/31  Khan Academy Using and understanding IMF’s

1. [Solubility and IMF](https://www.khanacademy.org/science/chemistry/ap-chemistry/states-of-matter-and-intermolecular-forces-ap/introduction-to-intermolecular-forces-ap/v/solubility)
2. [Surface Tension](https://www.khanacademy.org/science/chemistry/ap-chemistry/states-of-matter-and-intermolecular-forces-ap/introduction-to-intermolecular-forces-ap/v/surface-tension)

4/1 and 4/2 [Intermolecular Drawings and Forces](https://documentcloud.adobe.com/link/track?uri=urn%3Aaaid%3Ascds%3AUS%3A71ee839a-fce0-4aeb-98a3-d4256370823e) worksheet

4/3 [Molecular Geometry POGIL](https://documentcloud.adobe.com/link/track?uri=urn%3Aaaid%3Ascds%3AUS%3Accd916fa-1b85-4fdf-a939-7ef540659eb7)