Secondary V Physics Resources

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This document provides a list of resources to aid any review you feel is necessary after completing the physics self-evaluation. Remember that the self-evaluation did not assess your intelligence nor your ability to succeed in cegep physics. It simply helped you to identify potential gaps in your learning due to the exceptional circumstances last year. Your cegep physics teachers recognize the challenges you have faced, and continue to face, and will work with you to support your learning, starting with this targeted list of resources!

Please focus your review efforts on the physics that you found the most challenging during the self-evaluation. The self-evaluation included three main topics: vectors, kinematics, and forces. Your high school physics class will have included other physics, some of which are also directly relevant to your upcoming Mechanics class (e.g., work & energy) but these should be given a lower priority for now.

Listed here are the 3 resources we suggest: An e-text website, a set of videos, and a textbook. These are further broken down by topic on the next few pages. We do not expect you to use everything provided. We wanted to offer you different types of resources for similar concepts - you can decide what works best for you.

Resource 1) **Explorable Physics** by R. Landgreen. An interactive free e-text for algebra-based physics.
- https://landgreen.github.io/physics/

Resource 2) **Flipping Physics** youtube channel. Playlist of short lectures on high school physics using (stereotypical) student characters to make it more dynamic.
- https://www.youtube.com/c/Flippingphysics2013/playlists?view=50&sort=dd&shelf_id=4
- (Use the AP-Physics 1 playlist, that's the one without calculus)

Resource 3) **Openstax - College Physics**, P. Urone and R. Hinrichs. A free traditional textbook that you can consult online or download as a pdf.
- https://openstax.org/details/books/college-physics
- At times you may find this textbook goes beyond what you learned in high school, that is ok. Focus less on the equations and calculations and more on the basic concepts.

VECTORS

- Trigonometry
    - ➤ Explorable Physics
        - https://landgreen.github.io/physics/notes/review/vectors/#trigonometry
    - ➤ Flipping Physics
        - https://www.youtube.com/watch?v=1xumd7snmzo&list=PLPyapQSxH6maR-JEosZJ9rxW2cw3ACczG&index=6

- Vector addition and subtraction - both graphically and by component:
    - ➤ Flipping Physics: Motion in Two Dimensions playlist
        - First 7 clips https://www.youtube.com/playlist?list=PLPyapQSxH6mY_hbPFnqgb_Ru_gKos6mab
    - ➤ Openstax - College Physics
        - Chapter 3, sections 2 and 3.

KINEMATICS

- 1-Dimensional (1-D)

  - Explorable Physics
    - Motion: https://landgreen.github.io/physics/notes/motion/motion/
    - Kinematics: first half of the page, stopping at 2-D Projectile motion. https://landgreen.github.io/physics/notes/motion/kinematics/

  - Flipping Physics: Motion in One Dimension playlist
    - First 8 clips. https://www.youtube.com/playlist?list=PLPyapQSxH6mbXWoeU5ZqSwQiJmn6NqRGN

  - Openstax - College Physics
    - Chapter 2, sections 1-4, 7, and 8

- 2-Dimensional (2-D) Kinematics:

  - Explorable Physics
    - Kinematics: section titled 2-D Projectile Motion: https://landgreen.github.io/physics/notes/motion/kinematics/

  - Flipping Physics: Motion in Two Dimensions playlist
    - Clips 8, 13, 19 and 20 https://www.youtube.com/playlist?list=PLPyapQSxH6mY_hbPFnqgb_Ru_gKos6mab

  - Openstax - College Physics
    - Chapter 3, section 4

FORCES

- Intro to Forces and the 3 Newton's Laws of Motion

  - ➤ Explorable Physics: Newton's Laws
    - https://landgreen.github.io/physics/notes/force/laws/
  - ➤ Flipping Physics: Forces and Newton's Laws of Motion playlist
    - Clips 1,2,7-9, 11-12, 14-15 https://www.youtube.com/playlist?list=PLPyapQSxH6mYHT7hajhUASgJ0gINiDLsk
  - ➤ Openstax - College Physics
    - Chapter 4, sections 1-4.

- Free Body Diagrams & Types of Forces

  - ➤ Explorable Physics: Forces
    - https://landgreen.github.io/physics/notes/force/forces/
  - ➤ Flipping Physics: Forces and Newton's Laws of Motion playlist
    - Free body diagrams: Clips 5, 6,
    - Equilibrium: Clip 17
    - Friction: Clip 21
    - Inclined planes: Clip 29 (especially first 40 seconds) https://www.youtube.com/playlist?list=PLPyapQSxH6mYHT7hajhUASgJ0gINiDLsk
  - ➤ Openstax - College Physics
    - Normal force and Inclined Planes: Chapter 4, section 5
    - Free body diagrams: Chapter 4, section 6
    - Condition for Equilibrium: Chapter 9, section 1 (just the first condition for equilibrium, not the rotation and torque stuff)
    - Friction: Chapter 5, section 1 (focus less on the equations and more on what causes friction and the direction in which it acts)

WORK & ENERGY

- Work & Types of energy

  - ➤ Explorable Physics: Energy
    - https://landgreen.github.io/physics/notes/energy/energy/
  - ➤ Flipping Physics: Work, Energy, Power and Spring Force Playlist
    - Clips 1-5
      https://www.youtube.com/playlist?list=PLPyapQSxH6mbiFl7LXnJqmSuP_MrAXfny&pbjreload=101
  - ➤ Openstax - College Physics
    - Chapter 7, sections 1-5

- Conservation of energy

  - ➤ Explorable Physics: Conservation
    - https://landgreen.github.io/physics/notes/energy/conservation/
  - ➤ Flipping Physics: Work, Energy, Power and Spring Force Playlist
    - Clips 6-7
      https://www.youtube.com/playlist?list=PLPyapQSxH6mbiFl7LXnJqmSuP_MrAXfny&pbjreload=101
  - ➤ Openstax - College Physics
    - Chapter 7, section 5 (second half)