**Optics**

* **Constants**
  + c (Speed of Light) = 3.0 x 10 8 m/s
  + *h* (Planck constant) = 6.626 x 10 -34 J⋅s
  + 1 eV (Electron Volt) = 1.6 × 10 −19 J
* ­**Topics**
  + **Introduction** **(note 1 ; ignore history unless you want to add it as a separate topic)**
    - Give brief introduction of light and introduce fundamental equations, units and constants (Ex. E = mc^2 + Ek, 1eV = 1.6E-19 J etc)
  + **Geometrical Optics (note 2)**
    - Talk about reflection and refraction. Introduce snell’s law and law of reflection.
    - Show diagrams of light rays reflecting and refracting on spherical surfaces.
    - Show diagrams of light rays interacting with thin lenses.
  + **Optical Instrumentation (note 3a & 3b)**
    - Talk about Stops, Pupils, and Windows (refers to this: <http://hyperphysics.phy-astr.gsu.edu/hbase/geoopt/stop.html>)
    - Explain the properties of Prisms
    - Relate Geometrical optics to Camera, Magnifying eyepieces, Telescopes and microscopes
  + **Wave Equation (note 4 first half)**
  + **Superposition of Waves (note 4 second half)**
  + **Interference of Light (note 5)**
  + **Optical Interferometry (note 6)**
  + **Coherence (note 7)**
  + **Fraunhofer Diffraction (note 8)**
  + **Diffraction Grating (note 9)**
  + **Matrix Treatment of Polarization (note 10)**
  + **Fresnel Diffraction & Fresnel Equations (note 11)**