Pre-Lab reading: “Modern Optics” by Guenther: Interference by multiple reflection, Ch. 4. Pg.106-111; FPI Ch. 4. Pg. 111-117; Dielectric layer, Ch. 4. Pg. 97-98.

1.0. A solid FPI is made of on uncoated 2 cm thick slab of material (n=4.5). Relying only on the reflectivities of the air/material interface, what is the fringe contrast and the resolving power at $\lambda=500$ nm? A glass slab such as this, often with reflective coatings, is called a solid etalon and is used as a wavelength selective filter.

2.4. Two flat glass plates touch at one edge and separated by a hair at the other. Light with $\lambda=632.8$ nm is incident normal and 9 fringes are visible. What is the hair thickness?

3.12. Looking into a Michelson interferometer, we see a dark central disk surrounded by concentric light and dark rings. One mirror is 2 cm farther from the beam splitter than the other and $\lambda=500$nm. What is the order of the central disk and the 6th dark ring?

4.15. Two narrow parallel slits illuminated by yellow sodium light ($\lambda=589.29$nm) are found to produce fringes with a separation of 0.5nm on a screen 2.25m away. What is the distance between the slits?