

EE 341-AV Electromagnetics

Spring 2020

GROUP PROJECT

Due Date

April 20-22, 2020

You are given a book chapter on polarization written by R. Feynman. Two links on polarization And Jones calculus are:

<http://en.wikipedia.org/wiki/polarization>

http://en.wikipedia.org/wiki/Jones_calculus

Industry source:

<https://www.olympus-lifescience.com/en/microscope-resource/primer/lightandcolor/polarization/>

You produced as part of the test: MATLAB implementation of Polarization states given in the Feynman paper. A discussion on all these states indicating your understanding of light polarization included.

- a) 25%. As part of your project folder include improved version of the take home test.**
- b) 30%. MATLAB implementation of multiplication of each polarization state with a Jones matrix representing an optical element. Explain your results.**
- c) 30%. Develop high quality presentation slides and present in class.**
- d) 15%. Consider this ethics case below. Debate among yourselves. Write your judgment as a team.**

Ethics case study: Jocelyn Tan

Catherine is a new hire at a startup that produces LCD displays for large venues, such as shopping malls. Part of her job requires her to troubleshoot malfunctioning displays.

One day, a shopping mall reported that two display units out of twelve had stopped working from their installation three months prior. The customer also noted serial and revision numbers on the two units were different from the rest of the units. At the job site, Catherine inspected the displays and realized her company had sold units that were from a bad batch (i.e. group of displays that did not have over 50% yield during manufacturing). Catherine wanted to tell the site why the units failed, but recognized that if she disclosed this information, the site would be eligible to receive replacement displays at no additional cost. On the other hand, if she blamed the failing units on a weaker cause, such as improper installation, her company would be able to charge the site for replacement units. Catherine knew her manager would want her to choose the option that would minimize the company's losses; however, she wanted to be honest with the site as they were one of the company's best customers. What should she do?

Jocelyn Tan was a 2014-2015 Hackworth Fellow in Engineering Ethics at the Markkula Center for Applied Ethics at Santa Clara University.

You will learn a great deal on this project. You are allowed to search information from anywhere. You can discuss the problems with anyone. However, you will write your project alone as a team. This will be your project work product, including your MATLAB programs.

Good luck and Good learning