

This document gives a brief description of the python scripts used in the EP417 Computational Optics module:

Wave Optics:

interfere1d.py – used to simulate two-slit and N-slit interference

optics1d.py – one-dimensional Huygens wavelet simulations

optics1d_fresnel.py – 1D Fresnel integral simulations

optics2d.py – 2D Huygens

optics2d_fresnel.py – 2D Fresnel

cornu_spiral.py – generates plot of Cornu Spiral from Fresnel integrals

farfieldsingle.py – uses sinc() function to plot single-slit diffraction pattern

Geometrical Optics:

Vec2D.py and Vec3D.py – Python class definitions of vector objects and operators

raytrace.py – 2D raytracing, single wavelength (no dispersion)

raytrace_disp.py – 2D raytracing with dispersion.

Other files:

*.in – optional input files (refer to particular scripts for details); comment out lines in scripts if you choose not to use input files

*.out – optional output files (numbers used to generate plots)