

## 2022 Fall Semester 光學一 Optics I

**Instructor:** 王立邦 Li-Bang Wang, [lbwang@phys.nthu.edu.tw](mailto:lbwang@phys.nthu.edu.tw)

**Office:** Room 412 at physics building, Tel: 03-5742956, 0921-298321

**TA:**

**Time:** Tuesday and Thursday in **Room 313** of physics building

**Textbook:** "Optics" by Eugene Hecht, 5<sup>th</sup> Ed (Pearson global edition)

\*Background knowledge of electromagnetism is strongly recommended but not required.

**Grades:** Exams 30 % × 2, homework 40 %.

**Homework:** There will be a homework assignment in approximately every two weeks.

Schedule (subject to change):

Week	Date (Tue. Thu.)	Covered materials
1		Introduction, history, wave-particle duality
2		Wave motion
3		Electromagnetic theory
4		Propagation of light
5		Propagation of light
6		Geometric optics I
7		Geometric optics II, matrix method
8		Gaussian beams
9		Gaussian beams and optical resonators
10		<b>Midterm Exam</b> optical resonators
11		Using software, Superposition of waves
12		Fourier analysis
13		Fourier analysis
14		Polarization I
15		Polarization II
16		Interference
17		Interferometers
18		<b>Final Exam</b>

Material left for next semester: Diffraction, Fourier optics, Coherence, Lasers, Quantum optics, Nonlinear optics, Light-atom interaction, Laser spectroscopy and special topics.