



## **Course Syllabus**

教師： 黃承彬 (robin@ee.nthu.edu.tw)                      台達館 859    Ext. 62180  
助教代表： 陳咨佑 (a54854854@gmail.com)                      資電館 311    Ext. 34926

Class time: W5W6R8              Location:    Delta 211

### **Course Description:**

1. This is an introductory course into the field of optoelectronics. I am assuming you have sufficient background knowledge regarding electromagnetic waves.
2. Handouts and reading materials will be provided.
3. Be prepared in terms of regular short presentations, reading materials, homeworks, and quizzes.
4. You learn most efficiently by **asking questions!**

**Course materials:** available on <http://lms.nthu.edu.tw>

### **References:**

Topics 1~4: Hecht, *Optics*, 4<sup>th</sup> ed., Addison Wesley (2001).

Topic 7: Yariv and Yeh, *Optical Waves in Crystals*, Wiley (1984).

Topics 5,6,8,9: Kasap, *Optoelectronics and Photonics*, Prentice Hall (2001).

### **Course Content:**

- 1. Geometrical optics and ABCD matrix**
- 2. Wave basics**
  - a. Time-varying fields
  - b. Fundamentals of waves
  - c. Waves at interfaces
- 3. Coherent light**
  - a. Coherence, interference, scattering and diffraction
  - b. Superposition of waves
- 4. Dispersion**
- 5. Amplifiers and lasers**
- 6. Modulators**



# National Tsing Hua University

## 10710 EE 313000 Introduction to Optoelectronic Engineering

### 7. Polarization optics

- a. Polarization states, Jones matrix, and Optical birefringence
- b. Optical polarization devices

### 8. Optical waveguides

- a. Slab waveguides
- b. Optical fibers

### 9. Photodetectors

#### **Grading:**

Homeworks (no late turn-in) (20%, no normalization)

Quizzes (20%, no normalization)

Examinations (20% + 20% + 20%)

Dates: TBA

#### **Ethics policy:**

As a student of NTHU, you are here to learn.

1. You should always bear honor and confidence in your mind. You should be responsible for your own grade and in a longer term, your future. You can start by finishing your own class assignments.
2. Plagiarism in any form is unacceptable. The plagiarist will receive a (-100)% for that assignment. I do, however, encourage discussions among classmates.
3. Misconducts during examinations will result in failure of this course.
4. Overly active club participation makes no excuse for late homework and/or missing exams.