



National Tsing Hua University
10010 IPT 544000 Selected Topics in Ultrafast Optics

Course Syllabus

Instructor: Chen-Bin Huang (robin AT ee.nthu.edu.tw) EECS 704A Tel: 62180

Office hour: feel free to arrange with me via e-mail.

Class time: M5M6R5

Location: EECS 210

Course Description:

This course provides discussions and lectures so that the students may develop deeper understandings toward recent advancements in the field of ultrafast optics. The students will be asked to survey among top journal articles, express their opinions and join open discussions. Prior knowledge in ultrafast optics is beneficial but not required.

Class notes: <http://mx.nthu.edu.tw/~cbhuang> → Courses → STUO-Fall 2011

References:

A. M. Weiner, *Ultrafast Optics*, (Wiley, 2009). (NTHU library e-book)

J. Ye and S. T. Cundiff, *Femtosecond optical frequency comb: principle, operation and application*, 1st Ed, (Springer, 2004). (NTHU library e-book)

F. X. Kaertner, *Few-cycle laser pulse generation and its applications*, 1st Ed, (Springer, 2004). (NTHU library e-book)

Recent journal articles.

Teaching Method:

Lectures mainly in English; discussions in Chinese/English.



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Course Content:

- Brief review to *Ultrafast Optics*
- Second-order ultrafast nonlinear optics
- Third-order ultrafast nonlinear optics
- Generation and applications of optical frequency combs
- Manipulations of ultrashort optical pulses
- Ultrafast spectroscopy

Grading:

Homework (25%)

Two mid-term examinations (50%)

Final project (25%)