光電工程導論 Introduction to Optoelectronic Engineering, EE 3130

Time: M5M6W6 *(13:10-15:00, Monday and 14:10 Wednesday), at Room* **104**, *EECS bldg.*

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- **Course Description** 課程資訊**:**
  - 本課程是針對有興趣光電相關領域之初學者所設計，是一門介紹性的光電入門課程。
  - 課程將介紹電磁波、幾何光學、干涉、繞射、雙折射、液晶、波導、顯示、雷射、與非線性光學等現代光學特性。
  - This course is designed for the beginners who are interested in Optoelectronics and Photonics.
  - Modern optics, from EM-waves, geometric optics, interference, diffraction, birefringence, liquid crystals, waveguides, displays, lasers, and nonlinear optics, would be involved.
  - No background is required.
- **Text Books and References** 教科書及參考書**:**
  1. E. Hecht, "Optics," 4th edition, Addison Wesley (2001).
  2. S. O. Kasap, "Optoelectronics and Photonics," Prentice Hall (2001).
  3. G. Chartier, "Introduction to Optics," (2004).
  4. B. E. A. Saleh and M. C. Teich, "Fundamentals of Photonics," Wiley (1991).
  5. M. Born and E. Wolf, "Principles of Optics," 7th edition, Cambridge (1999).
- **Teaching Method** 授課方式**:**
  in-class lectures with examples and projects studies.
- **Syllabus** 教學進度**:**
  1. Introduction to modern photonics,
  2. Ray optics (lens, mirrors, prisms, et al.),
  3. Wave optics (plane waves and interference),
  4. Beam optics (Gaussian beam and resonators),
  5. Electromagnetic optics (reflection and refraction),
  6. Fourier optics (diffraction and holography),
     期中考, Midterm,
  7. Crystal optics (birefringence and LCDs),
  8. Waveguide optics (waveguides and optical fibers),
  9. Photon optics (light quanta and atoms),
  10. Laser optics (spontaneous and stimulated emissions),
  11. Semiconductor optics (LEDs and LDs),
  12. Nonlinear optics,
  13. Quantum optics,
      期末考, Final exam,
  14. 期末口頭報告, Semester oral report,
- **Evaluation** 評分方式**:**
  1. Midterm, 期中考, 40%;
  2. Final exam, 期末考, 40%
  3. Semester oral report, 期末口頭報告, 20%.
- **Office hours** 諮詢時間**:**
  15:30-17:00, Wednesday at Room 523, EECS bldg.
- **More information:**
  http://mx.nthu.edu.tw/∼rklee

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