DCP 3527 Electronics (I)

- **Time of Offering:** Fall Term, 2006 (9/11/06 – 1/12/07)
- **Level:** Undergraduate, Second Year
  - Mandatory for students in *Systems Design* program
  - Elective for students in other programs
- **Instructors**
  - **Prof. John Kar-Kin Zao** (邵家健)
    - E-mail: jkzao@cs.nctu.edu.tw
    - Office: MIRC412/EC527 (電資大樓 412/工三館 527)
    - Phone: Ext31470/54731
    - Lab: Pervasive Embedded Technology (PET) Laboratory
    - URL: http://www.csie.nctu.edu.tw/~jkzao/
  - **Prof. Wen-Hsiao Peng** (彭文孝)
    - E-mail: pawn@mail.si2lab.org
    - Office: EC431 (工三館 431)
    - Phone: Ext56625
    - Lab: Multimedia Architecture and Processing Laboratory (MAPL)
    - URL: http://140.113.241.79/
- **Course Homepage**
  - http://140.113.241.79/course/ele_1.html
- **Lectures**
  - The course meets on Tuesdays from 10:10am to 12:00pm and Thursdays from 3:40pm to 5:30pm, in **EC 114** (Prof. Peng) and **EC115** (Prof. Zao).
- **Course Outline**
  - (4 weeks) Basic Signal, System and Circuit Analysis
    - Basic Concepts of Signals and Systems.
    - Time Domain vs. Frequency Domain Analyses.
    - Basic Concepts of Electrical Circuits.
    - Laplace Transform and Applications in Electrical Circuit Analysis
  - (4 weeks) Electronic Devices
    - Basic Semiconductor Physics, Device I-V Characteristic and Models.
- Semiconductor Diodes
- Metal-Oxide-Semiconductor Field Effect Transistors (MOSFET)
- Bipolar Junction Transistors (BJT) (optional)

- **(6 weeks) Single Transistor Amplifier**
  - Basic Concepts of Amplifiers
  - Single Transistor Amplifier with MOSFET
  - Single Transistor Amplifier with BJT (optional)

- **(Optional 2 weeks) Operational Amplifiers (OP-AMP)**
  - Ideal OP-AMP Models
  - Simple Applications

**Text Book**
- Lecture Notes on Basic Electronics for Computer Science Students
  - Edited by Prof. John Kar-kin Zao (邵家健), Prof. Wen-Hsiao Peng (彭文孝), 邱俊瑋 (資工3A), 徐瑜謙 (資工3B), 呉思賢 (資工3A), 蕭禕涵 (資工)

**Reference Books**

**Grading Policy**
- 30% Homework:
  - 2 P-Spice Simulations Experiments and Reports.
  - 1 Written Assignment.
- 30% Mid-term Examination (2006/10/26, Thursday; closed book)
- 40% Final Examination (TBD, closed book)

**Office Hours**
- Appointments can be made through e-mail before hand.

- Teaching Assistant
  - TBD

- Miscellaneous
  - Holidays: 10/10 (Tuesday).
  - Prof. Zao, 9/15~9/26 – visiting EU Research Institutes with Dean Wu.
    - Joint lectures will be given by Prof. Peng on 9/19, 9/24, and 9/26 in EC114.
    - Joint lecture will be given by Prof. Zao on 10/24, in EC115.
    - Mid-term exam on 10/26 (Thursday).
    - Joint lectures will be given by Prof. Peng on 12/12 and 12/14, in EC114.