YunTech

113年度第二學期 電機系 四電機2A

信號與系統 (*Signals and Systems*)

Instructor: Dr. Hsuan-Ting Chang (張軒庭)
Professor, Department of Electrical Engineering

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- Instructor: 張軒庭
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  - Office: EN307, Tel: ext. 4263
  - Office Hours: by appointment
  - Email: htchang@yuntech.edu.tw

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- 2A – 星期四下午 GHZ(3-6pm)
- 教室: 工程五館 EB106
- 助教: xxx，xxx (碩士研究生)
- 主動課輔TA : 未定

- 助教實驗室: EN308 (工程六館三樓)
- Tel: ext. 4299

Textbooks

1. A. Oppenheim, A. Willsky, and H. Nawab, Ding, ***Signals and Systems***, 2nd adapted edition, 2016, Pearson, 歐亞書局代理

Reference Books:

1. M.J. Roberts, ***Fundamentals of Signals and Systems***, McGraw Hill International Edition, 2008, 滄海圖書代理
2. J.H. McClellan, R.W. Schafer, & M.Y. Yoder, ***Signal Processing First***, Pearson Education International, 2003, 開發圖書代理,

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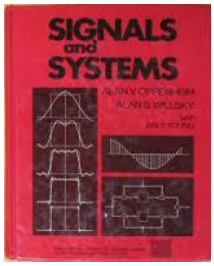
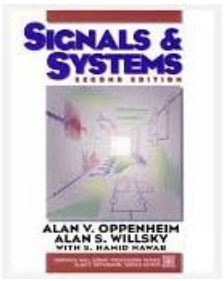
About the textbook

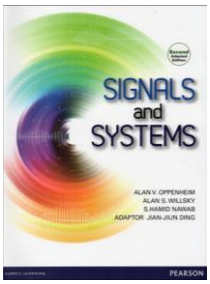
- 「**訊號與系統**」是電子電機及其他相關科系的專業課程，是所有訊號處理與系統分析相關課程和研究的基礎。
- Oppenheim等人所著的Signals & Systems 一書內容兼具廣度和深度，可說是訊號與系統的經典著作之一。



第一版



第二版



加強第二版

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Grading

- Homework & Quiz: **20%**
- Midterm Examination: **40%**
- Final Examination: **40%**
- 出席率與上課發問: **+/- 10%**

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Prerequisite

- ***Math***:
  - Calculus, Matrix, Vectors, Complex numbers
- ***English***:
  - Reading: vocabularies and ***grammar***
  - Listening: 需熟悉英文專有名詞
- ***Motivation***
  - Goal and attitude
- ***Self-confidence***

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Following Courses

- DSP (digital signal processing)
- Linear systems
- Communication systems
- Control systems

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- *Any courses require knowledge of* ***Fourier transform/analysis*** *(frequency-domain analysis)*

Contents

- **Chap 1. Signals and Systems**
- **Chap 2. Linear Time-invariant Systems**
- **Chap 3. Fourier Series for Periodic Signals**
- **Chap 4. Continuous-Time Fourier Transform**
- **Chap 5. Discrete-Time Fourier Transform**
- ~~**(Chap 6. Time and Frequency Characterization)**~~
- **Chap 7. Sampling** (From analog to digital)

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Signals

- Continuous-time (CT) & discrete-time (DT)
- Real & complex
- Sinusoidal, exponential, complex exponential
- Periodic & aperiodic
- Fourier series analysis & Fourier transform

Systems

- Memory & memoryless,
- Casual & non-casual,
- Stable & non-stable,
- Linear & nonlinear,
- Time variant & invariant
- Linear time-invariant (LTI) & linear time-variant (LTV)

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CT & DT Signals

- Periodic signals:
  - Fourier series representation
  - Fourier transform
- Aperiodic signals:
  - Fourier transform
  - ***no*** Fourier series representation

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