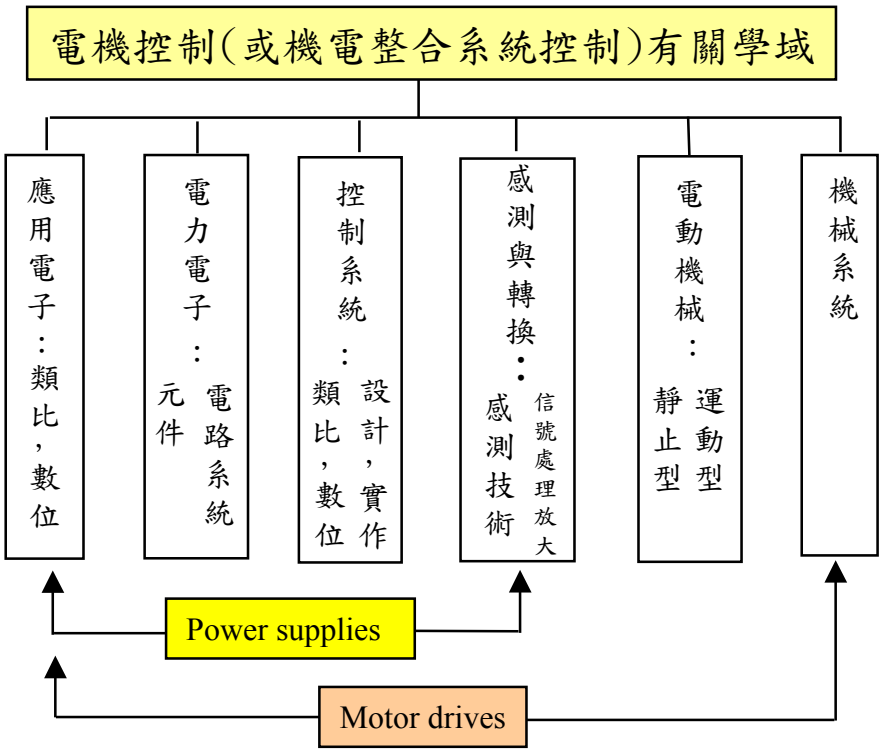
電機控制 (EE4840) 課前介紹

課程目的及內容：

目的： 介紹一個典型工業控制系統之操作實務，構建此系統必要組件之結構與工作原理。

所涉及領域：



內容： 如所列。

教材: 原則上由任課老師提供講義。

考核方式： 作業、考試。

實驗： 視實際需要及時間儘量提供。

Electric Machine Control (EE4840) (C. M. Liaw)

Contents

- Introduction to electric machine control.
- Overview of power semiconductor devices.
- Introduction to motor drives and their applications.
- Dynamic and static specifications of sensors.
- Sensors and transducers.
- Signal conditioning circuits for sensors and transducers.
- V/I, I/V, F/V, V/F, A/D, D/A converters.
- Shielding and grounding of power electronic systems.
- Analog controllers.
- Digital controllers.
- Power converters.
- DC motor drives (converter-fed and chopper-fed)
- AC motor drives:
  Modulation techniques and harmonic analysis.
  Inverters (DC-AC converters).
  Induction motor drives.
  Synchronous motor drives (Brushless DC Motor (BDCM) drives).
- Experiments (solid-state motor control).

Text book:

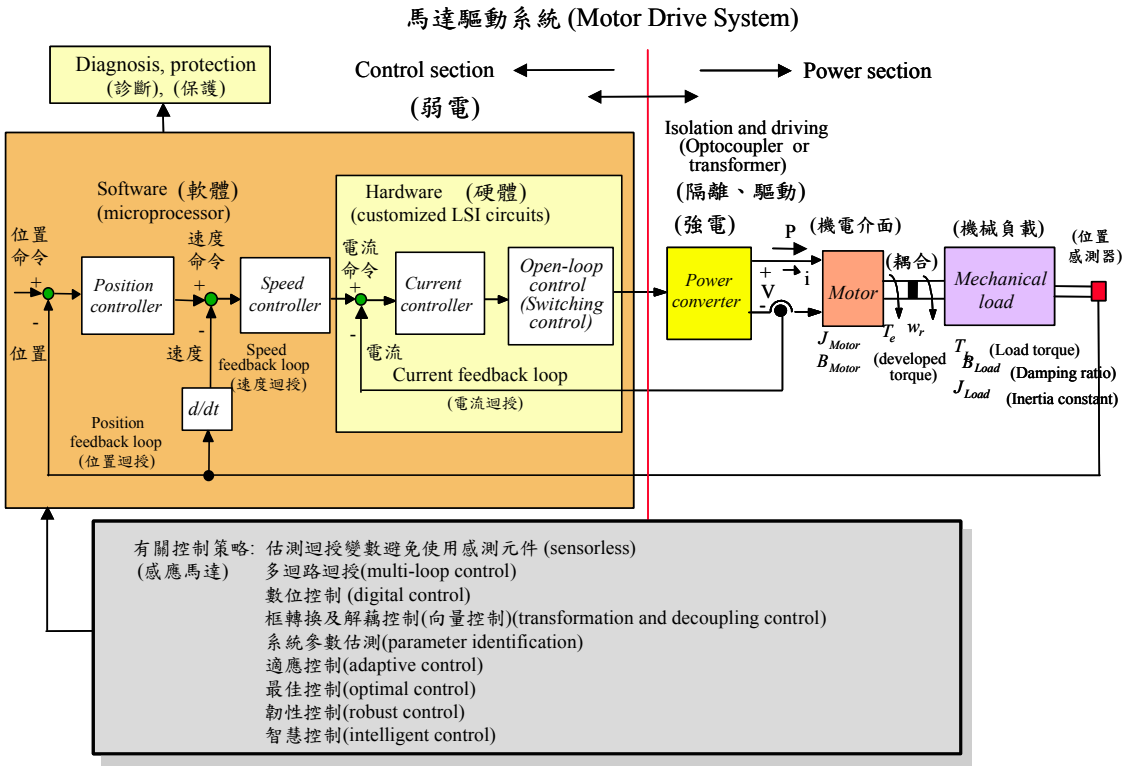
- 講義
- Timothy J. Maloney, *Modern industrial electronics*, 5th Ed., Pearson Prentice Hall, 2004.

Reference books:

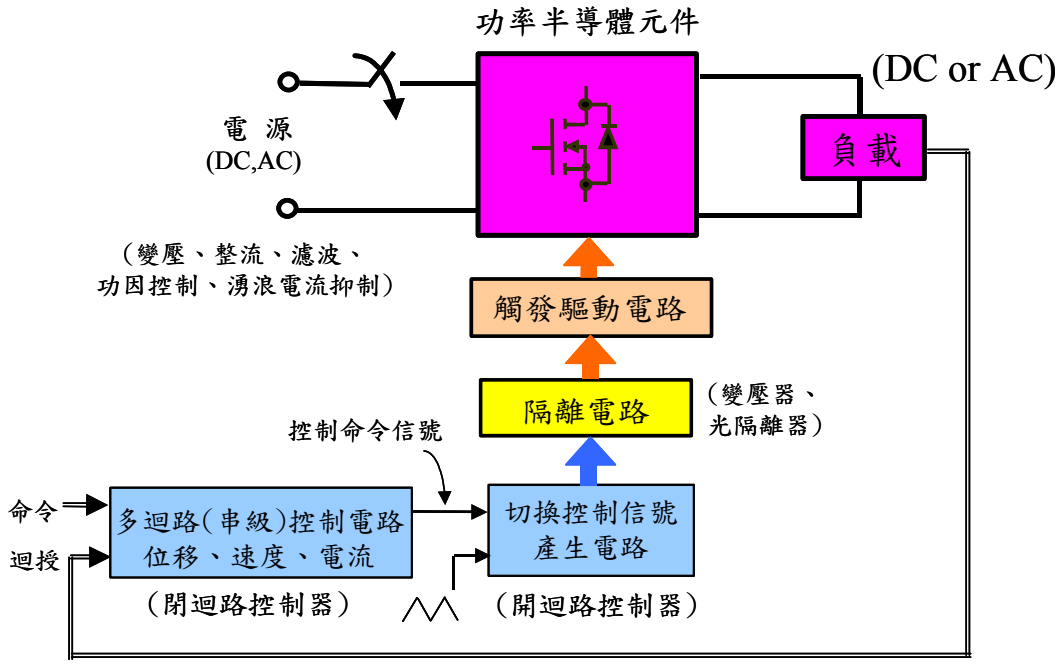
- R. Krishnan, *Electric motor drives: modeling, analysis and control*, Prentice Hall, 2001.
- J. M. Jacob, *Industrial control electronics*.
- J. M. Jacob, *Power electronics: principles and applications*, Delmar Thomson Learning, 2002.
- G. K. Dubey, *Power semiconductor controlled drives*, Alpha Science, UK, 2001.
- Sergey E. Lyshevski, *Electromechanical systems, electric machines and applied mechatronics*, CRC Press, 2000.
- Ned Mohan et al., *Power Electronics: Converters, Applications and Design,* 3rd Ed., John Wiley & Sons, Inc., 2003.
- P. C. Sen, *Thyristor DC Drives*.
- B. K. Bose, *Modern Power Electronics and AC Drives*, Prentice Hall PTR, New Jersey, 2002.
- Robet W. Erickson and Dragan Maksimovic, *Fundamentals of Power Electronics*, 2nd Ed., Kluwer Academic Publishers, 2001.
- Others

C. M. Liaw

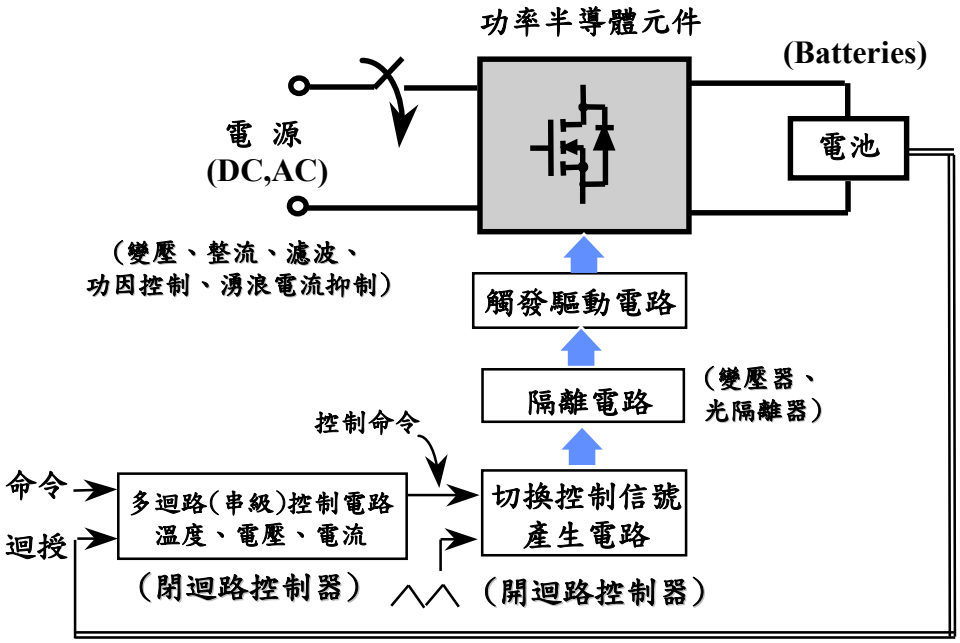
機電整合及電機電子整合介紹



電力電子電路基本組成



電池充電電路基本組成



電池系統研發有關學域