CS1011: 數位電子導論

Course Outline

Course Administration

- ▣ 授課老師: 劉一宇
  - ◆ 研究室: T4-305-2　　　　電話: 3664
    e-mail: yyliu@mail.ntust.edu.tw

- ▣ 助教: 秦毓勝、戴品元、王孝宇、林宇恩
  - ◆ 實驗室: LB-002　　　　電話: 6808
    e-mail: m11015014@mail.ntust.edu.tw

- ▣ CS1011:
  - ◆ 時間: 星期二 9:10-10:00, 星期四 10:20-12:10
  - ◆ 地點: TR-313

- ▣ Office Hour:
  - ◆ 星期二 13:00-15:00
  - ◆ 考量大家可能有排課，請以e-mail提前預約時段 (可預約其他時段)

Textbook

- **Electronics For Dummies (3rd Edition)**
  - ◆ **Dickon Ross, Cathleen Shamieh, and Gordon McComb**
    - » **Free online e-book is available**
- **Foundations of Analog and Digital Electronic Circuits**
  - ◆ **Anant Agarwal and Jeffrey Lang**
    - » **Online copy is available if you get enrolled in MIT 6002 via edX**
    - » **https://courses.edx.org/**
- **Digital Design – 6th edition**
  - ◆ **M. Morris Mano, Michael D. Ciletti**
  - ◆ **代理商資訊: 周耀文先生 0932-597262**
- **Reference Book**
  - ◆ **Electronics: A Systems Approach (6th, 2017)**
    - » **Neil Storey**

Topics Covered

- ▣ **Basic Electric Circuits and Components**
- ▣ **Sensors and Actuators**
- ▣ **Signals and Data Transmission**
- ▣ **Resistance, Capacitance, and Inductance**
- ▣ **Alternating Current and Filters**
- ▣ **Diodes**
- ▣ **Field-effect Transistors**
- ▣ **Complementary Metal-Oxide-Semiconductor**
- ▣ **Very Large Scale Integration**
- ▣ **Digital Systems and Binary Numbers**
- ▣ **Boolean Algebra and Logic Gates**

Introduction to Digital Electronics

Project Assignments

- ◉ **Basic projects (6-7 assignments)**
  - ◆ **Basic Linux environment**
  - ◆ **SPICE simulation**

- ◉ **Advanced projects (2 assignments + 1 final project)**
  - ◆ **Full-custom IC design**
    - » **Schematic design**
    - » **Pre-layout simulation**
    - » **Layout design**
    - » **Post-layout simulation**

Introduction to Digital Electronics

Expected Course Workload

- ▣ **8-9 homework/project assignments**

- ▣ **One midterm and one final examination**

- ▣ **One final project**

- ▣ **Grade breakdown in points, denote as %**
  - ◆ **Project**   **50% (50 - 60%)**
  - ◆ **Midterm Exam**   **25% (20 - 25%)**
  - ◆ **Final Exam**   **25% (20 - 25%)**
  - ◆ **Extra bonus points for Q&A in Moodle Discussion Forum (課程討論區)**

  - ◆ **Notice that the lump sum points could exceed 100%**
    - » **In that case, final score is based on interpolation between 0 and 99**

Introduction to Digital Electronics

Code of Honor

- ▣ **What is cheating?**
  - ◆ **It's simple: just be HONEST!**
  - ◆ **Study together in groups is encouraged**
  - ◆ **Work must be your own**
  - ◆ **Copy is definitely a cheating act**
- ▣ **Cannot make examinations**
  - ◆ **For fairness reason, it is unlikely to provide makeup examinations**

Introduction to Digital Electronics

Online Interactive Quiz

- 請帶手機、平板、筆電到教室
- 連線至**App Store**安裝**Socrative Student Version**
- **https://socrative.com/apps/**

- **Room Name: NTUSTIDE**
- **Your name: 學號 (英文要大寫)**

Introduction to Digital Electronics

Differentiated Learning

學生背景

| 曾經學過基本電學、電子學、數位邏輯 | 未曾學過基本電學、電子學、數位邏輯 |

差異化學習

基礎知識課程 （虛線框） ｜ 基礎知識課程

實作講解

統合式評量
成績比重可能適度調整

筆試 (50%)

實作 (50%)

Introduction to Digital Electronics
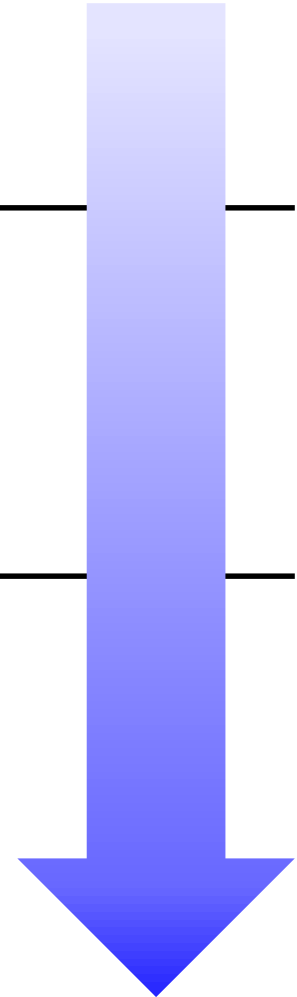
Measures for COVID-19 Outbreak

- **In case of in-campus COVID-19 outbreak (i.e., class suspension), our class would be moved to "cloud" except examinations.**
  - ◆ **Online lecture: WebEx, YouTube**
  - ◆ **Q&A discussion: Moodle**
  - ◆ **Score ratio is subject to change.**
  - ◆ **…**
  - ◆ **Class information would be announced in NTUST Moodle.**

Introduction to Digital Electronics