Sensing Technology
傳感器技術

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Course Description 課程概述

This course mainly focuses on introducing various sensors and its front-end circuit. In addition, we also discuss the application cases from the view of system specification. All sensors and circuits mentioned in this course would be modularized first and then be further applied to a real case for live.

本課程主要的重點在於各種感測器與前端電路，並以系統規格的角度來探討實際應用情況。針對課程上所提到的電路進行模組化，並且應用於生活中。

Course Time and Office Hours
課程時間與辦公室時間

- **Course Time & Place:**
  - **3C: 09:10 ~ 12:00,**
    Tuesday, at W100
- **Office Hours & Place:**
  - 13:10 ~ 15:00, Monday, at C309
  - 14:10 ~ 16:00, Thursday, at C309

Grading 評量考核

- **Attendance (出席占分)： -5 % ~ 5 %**
- **Homework (平時占分)： 40 %**
- **Midterm Test (期中考占分)：30 %**
- **Final Project (期末專題占分)： 30 %**

Attendance 出席 -5~5 %

- **Roll-call(點名) each class**
  -0.5 each since 2nd arrival late
- **Signature(簽名) each class**
  -1 for 1st absence, -2 each for 2nd and 3rd absences, -1 each since 4th absence

Exception(例外):

- **Final test will be rejected if the number of absences is up to six because your learning has not been recognized to complete this course.**

Homework 作業 40 %

- **Quizzes(小考):** Grading for sum of righted answers in total problems
- **Paper-based** assignments(紙上作業): Grading for sum of righted answers in total problems
- **Video-based** assignments(影片作業)
- **Deliver your paper/video assignments on time:** The score will be reduced due to overdue
- **Don't cheat for your any homeworks (作業不抄襲 或 被抄襲)**
  The score would be **zero** once one is verified

Mid-term Test 期中考 30 %
Final Project 期末專題 30 %

- **3~4-page Problems in English/Chinese 三至四頁中英文:** Closed book and 100 points are maximally graded from **100~120-point** problems
- **Don't cheat in any tests 考試不作弊**
  The score would be **zero** once one is verified.
- **Open for all the gradings 公開評量** (You can check your scores about homework and tests anytime)
- **No 58~59.9 points in term score 期末成績排除 58~59.9分**

Teaching Web 教學網頁

http://www.nhu.edu.tw/~chun

Video-based Web: 歷年影片作業
http://qnew.nhu.edu.tw

數位學習平台: Materials課程教材下載
http://moddle.nhu.edu.tw
Login登入畫面

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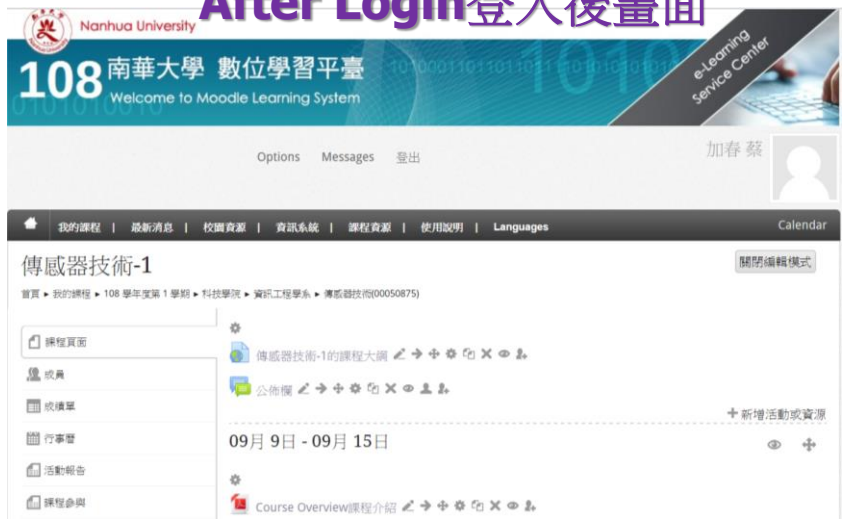
After Login登入後畫面



Text Material Resources

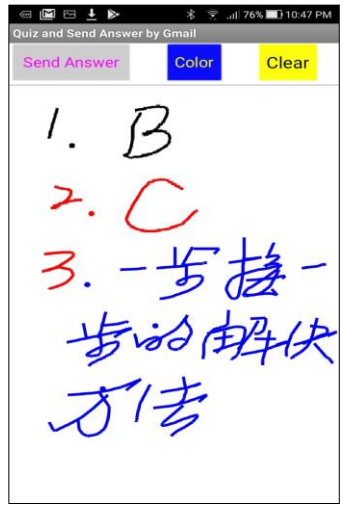
Various website sources

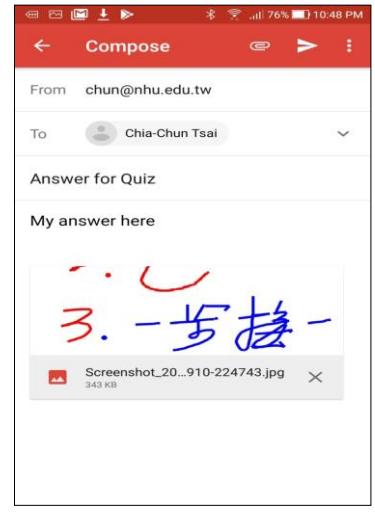
本編輯教材參考網站可查詢之各種資源，任何延伸教材僅作為授課教學使用，限本課程修課學生教育學習用途，禁止私下傳播複製重製或公開散佈等。

Prepare your materials
準備素材

- Concentration and Passion 專心與熱衷
- Notebook 筆記本
- Install Quiz_SendAnswerByGmail.apk
  Android 手機-下載與裝置 小考專用app
- Propose questions anytime 隨時提問
- Quiz or Exercise if a teaching class is needed 假使該次教學需要，將小考或練習(open book)，以照相答案後傳送

Quiz_SendAnswerByGmail.apk
小考專用於互動的APP





Contents 目錄/課程內容 for Sensing Technology 傳感器技術

Unit00. Course Overview 課程概述

Unit01. Introduction of Sensors and Sensing System 感測器及感測系統簡介

Unit02. Physical Quantity Changes are Converted into R, I, or V 物理量變化轉換為電阻、電流與電壓

Unit03. Electrical Level Conversion Circuit and Analysis 電性準位轉換電路及分析

Unit04. Front-end Sensing Circuit Techniques for Sensing System 感測系統之前端感測電路技術

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Unit05. Rear-end Conversion Circuit Techniques for Sensing System 感測系統之後端轉換電路技術 (如ADC, DAC)

Unit06. Power Output Drivers for Sensing System 感測系統之功率輸出驅動器

Unit07. Temperature Sensors: Principle, Application and Circuit Analysis 溫度感測器之原理、應用及電路分析

Midterm Test 期中考

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Unit08. Ultrasonic and Proximity Sensors: Principle, Application and Circuit Analysis
超聲波與近接感測器之原理、應用及電路分析

Unit09. Photoelectric and Pressure Sensors: Principle, Application and Circuit Analysis
光電與壓力感測器之原理、應用及電路分析

Unit10. Displacement and Flow Sensors: Principle, Application and Circuit Analysis
位移與流量感測器之原理、應用及電路分析

Unit11. Sensor Planning Term-Project 感測器期末專題之計畫書規劃

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Unit12. Sensor Case Study & Discussion (I)
感測器專題案例研討(一)

Unit13. Sensor Case Study & Discussion (II)
感測器專題案例研討(二)

Unit14. Sensor's Term-Project Comprehensive Report (I) 感測器期末專題計畫書綜合報告(一)

Unit15. Sensor's Term-Project Comprehensive Report (II) 感測器期末專題計畫書綜合報告(二)

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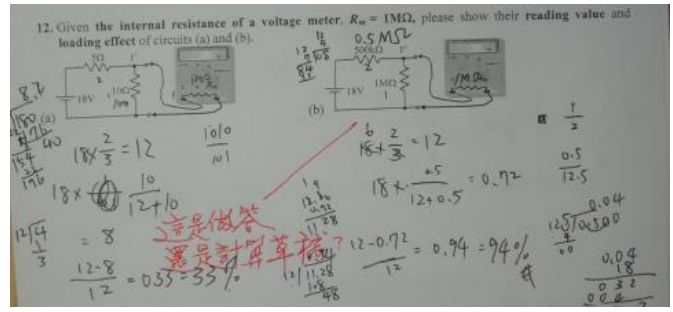
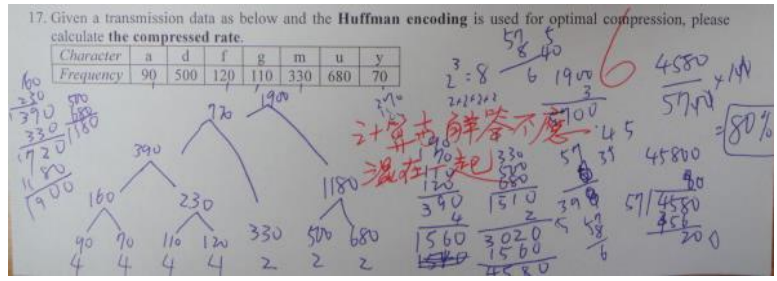
Term-Project Assessment and Comprehensive Commentary
期末專題考核綜合講評

Scheduling for CSIE-3C

9/10(二 2~4), 9/17, 9/24, 10/1,
10/8 (No Class, 11/7晚上期中考代替補課)
10/15, 10/22, 10/29, 11/5,
11/7(四, 6:00PM~ at C322, Midtem Test)
11/12, 11/19, 11/21補課(四6~8 C219), 11/26,
12/ 3 (No class, 11/21補課(四6~8 C219))
12/10 (No class, 12/19補課(四6~8 C219))
12/17, 12/19補課(四6~8 C219), 12/24, 12/31,
1/7(Tue, 9:10AM~ at W100, Final Evaluation)

Remind for Answering Any Tests
提醒：作答時，答案與計算勿混淆





Hints for Making Your Classnotes
提示：自行作筆記 條列分明