



教學計劃表 Syllabus

| | | | | | | | | | |
|------------------------------------|-----------------|-----------------------------|---------------------------------|------------------------------------|--------|--|--|--|--|
| 課程名稱(中文) Course Name in Chinese | 電子學(二) | | 學年/學期 Academic Year/Semester | | 114/2 | | | | |
| 課程名稱(英文) Course Name in English | Electronics(II) | | | | | | | | |
| 科目代碼 Course Code | OE_10190 | 系級 Department & Year | 學二 | 開課單位 Course-Offering Department | 光電工程學系 | | | | |
| 修別 Type | 學程 Program | 學分數/時間 Credit(s)/Hour(s) | | 3.0/3.0 | | | | | |
| 授課教師 Instructor | /林楚軒 | | | | | | | | |
| 先修課程 Prerequisite | | | | | | | | | |

課程描述 Course Description

電子學是電子相關產業必備的基礎知識，本課程會接續電子學一的內容，重點為：

1. Bipolar Amplifiers
2. Physics of MOS transistors
3. CMOS Amplifiers
4. Cascode Stages and Current Mirrors
5. Differential Amplifiers
6. Frequency Response

課程目標是

- (1) 認識放大器電路之特性
- (2) 具有分析電子電路之能力。

課程目標 Course Objectives

- (1) 認識放大器電路之特性
- (2) 具有分析電子電路之能力。

| 系專業能力 Basic Learning Outcomes | | 課程目標與系專業能力相關性 Correlation between Course Objectives and Dept.'s Education Objectives |
|----------------------------------|---|---|
| A | 具有光電相關的物理、化學、材料及數學的知識。Physics, chemistry, material, and math knowledge related to opto-electronic engineering | ● |
| B | 具有光電工程的專業知識及應用能力。Professional knowledge and application ability of opto-electronic engineering | ● |
| C | 具有設計與執行實驗、報告撰寫與數據解釋之能力。Abilities to design and execute experiment, write reports, and explain data | ○ |
| D | 使用儀器進行物件的分析及測試。Analysis and test of devices by instruments | ○ |
| E | 具備適當的英文能力，應用於學習與交流。English language ability to study and interact | ● |
| F | 具有良好的溝通與團隊合作的能力。Ability to communicate and teamwork | ○ |
| G | 具有創新思維及終身學習的能力。Creative thinking and life-long learning ability | ● |

圖示說明 Illustration : ● 高度相關 Highly correlated ○ 中度相關 Moderately correlated

授課進度表 Teaching Schedule & Content

| 週次 Week | 內容 Subject/Topics | 備註 Remarks |
|---------|--------------------|------------|
| 1 | Bipolar Amplifiers | |
| 2 | Bipolar Amplifiers | |

| | | |
|----|---|--|
| 3 | Physics of MOS Transistors | |
| 4 | Physics of MOS Transistors | |
| 5 | Physics of MOS Transistors | |
| 6 | CMOS Amplifiers/期中考 | |
| 7 | CMOS Amplifiers | |
| 8 | Op Amp | |
| 9 | Op Amp | |
| 10 | Cascode Stages and Current Mirrors | |
| 11 | Cascode Stages and Current Mirrors/期中考 | |
| 12 | Differential Amp | |
| 13 | Differential Amp | |
| 14 | Differential Amp | |
| 15 | Differential Amp | |
| 16 | Frequency Response | |
| 17 | 期末考/Frequency Response | |
| 18 | 自行看 https://www.youtube.com/watch?v=Mo0Rc8I0RtE&t=1373s 之後FR相關影片， 有問題office hours來討論 | |

教 學 策 略 Teaching Strategies

課堂講授 Lecture 分組討論 Group Discussion 參觀實習 Field Trip
 其他 Miscellaneous:

教 學 創 新 自 評 Teaching Self-Evaluation

創新教學 (Innovative Teaching)

問題導向學習 (PBL) 團體合作學習 (TBL) 解決導向學習 (SBL)
 翻轉教室 Flipped Classroom 磨課師 Moocs

社會責任 (Social Responsibility)

在地實踐 Community Practice 產學合作 Industy-Academia Cooperation
 跨域合作 Transdisciplinary Projects 跨院系教學 Inter-collegiate Teaching
 業師合授 Courses Co-taught with Industry Practitioners

其它 other:

學期成績計算及多元評量方式 Grading & Assessments

| 配分項目 Items | 配分比例 Percentage | 多元評量方式 Assessments | | | | | | |
|--|--------------------|--------------------|----------|----------|----------|----------|----------|----------|
| | | 測驗 會考 | 實作 觀察 | 口頭 發表 | 專題 研究 | 創作 展演 | 卷宗 評量 | 證照 檢定 |
| 平時成績(含出缺席) General Performance (Attendance Record) | 40% | | | ✓ | | | | |
| 期中考成績 Midterm Exam | 40% | ✓ | | | | | | |
| 期末考成績 Final Exam | 20% | ✓ | | | | | | |
| 作業成績 Homework and/or Assignments | | | | | | | | |
| 其他 Miscellaneous (_____) | | | | | | | | |

評量方式補充說明
Grading & Assessments Supplemental instructions

上課抽問:40%(有到就有一半分), 三次考試:60%

教科書與參考書目 (書名、作者、書局、代理商、說明)

Textbook & Other References (Title, Author, Publisher, Agents, Remarks, etc.)

Fundamentals of Microelectronics, Razavi

課程教材網址(含線上教學資訊, 教師個人網址請列位於本校內之網址)

Teaching Aids & Teacher's Website (Including online teaching information.

Personal website can be listed here.)

<https://elearn4.ndhu.edu.tw/moodle/>

<https://meet.google.com/dhm-mzrs-mgu>

其他補充說明 (Supplemental instructions)