

## 課程簡介 Course Introduction

開課班級 Department	電機工程學系
授課方式 Instructional Method	課堂教學、中文
課程代號 Course Reference Number	182093
課程名稱(中文) Course Title (Chinese)	微波元件
課程名稱(英文) Course Title (English)	Microwave devices
學分數/時數 Credit Hours	3 / 3
必(選)修 Requirement / Elective Course	選修
授課老師 Instructor	陳居毓

## 課程目標 Learning Objectives

- (1) Understanding the design of Passive Microwave Coupler
- (2) Understanding the design of Passive Microwave Filter
- (3) Understanding the design of Passive Microwave Power Dividers, Combiners and Balun
- (4) Understanding the design of Active Microwave Amplifier
- (5) Understanding the design of Active Microwave Mixer
- (6) Understanding the design of Active Microwave Oscillator

## 先修 ( 前置 ) 課程 Prerequisite

Microwave Engineering  
Electromagnetic wave  
Electrical circuits

## 課程大綱 Course Syllabus

週次 Week	課程單元大綱 Unit	教學方式 Instructional Method/Style/Teaching Style	參考資料或相關作業 References or Related Materials	評量方式 Grading
1	Coupler: Part 1	lecture		
2	Coupler: Part 2	lecture		
3	Coupler: Part 3	lecture		
4	Coupler: Part 4	lecture		
5	Resonant circuit	lecture		
6	Filter Design: Part 1	lecture		
7	Filter Design: Part 2	lecture		
8	Filter Design: Part 3	lecture		
9	Midterm Exam.	2-hours paper test		
10	Power Dividers, Combiners and Balun: Part 1	lecture		

11	Power Dividers, Combiners and Balun: Part 2	lecture
12	Active RF/Microwave Communication Circuits: Amplifier: Part 1	lecture
13	Active RF/Microwave Communication Circuits: Amplifier: Part 2	lecture
14	Active RF/Microwave Communication Circuits: Mixer:Part 1	lecture
15	Active RF/Microwave Communication Circuits: Mixer:Part 2	lecture
16	Active RF/Microwave Communication Circuits: Oscillator:Part 1	lecture
17	Active RF/Microwave Communication Circuits: Oscillator:Part 2	lecture
18	Final Exam.	2-hours paper test

## 單一課程對應校能力指標程度

### The Degree to Which Single Course Corresponds to School Competence

編號 No.	校核心能力 School Core Competencies	符合程度 Degree of conformity
1	道德力 (Morality)	3
2	自學力 (Self-learning)	5
3	創造力 (Creativity)	5
4	溝通力 (Communication)	3
5	就業力 (Employability)	5

## 單一課程對應系能力指標程度

### The Degree to Which Single Course Corresponds to Department Competence

代碼 No.	類別 Category	系核心能力 Department Core Competencies	符合程度 Degree of conformity
01	系所	運用數理、邏輯及基本電機之能力	5
02	系所	熟悉電機軟硬體專業技術之能力	5
03	系所	獨立思考、主動求知與研究創新之能力	5
04	系所	培養實作與分析實驗成果之能力	4
05	系所	理解社會責任與學術倫理之能力	3
06	系所	有效溝通表達與團隊合作之能力	4
07	系所	中英文語文及寫作之能力	4
08	系所	資訊蒐集、分析及彙整之能力	5

## 單一課程對應院能力指標程度

### The Degree to Which Single Course Corresponds to College Competence

編號 No.	院核心能力 College Core Competencies	符合程度 Degree of conformity
1	語文能力	4
2	溝通與合作能力	3
3	創新與實踐能力	4
4	專業知能	5

## 教科書或參考用書(館藏) Textbooks or Reference Books(Library Books)

Design of analog CMOS integrated circuits / Behzad Razavi

## 教科書或參考用書(備註) Textbooks or Reference Books(Remarks)

Textbook:

David Pozar, Microwave Engineering, 3rd edition, (Wiley, 2005)

Reference book:

(1) Robert E. Collin, Foundations for Microwave Engineering, 2nd edition, (McGraw Hill, 1992).

(2) B. Razavi, Design of Analog CMOS Integrated Circuits, McGraw-Hill, 2000

## 教學方法 Teaching Method

教學方法 Teaching Method	百分比 Percentage
影片欣賞	10.0
講述	50.0
問題導向學習	20.0
專題實作	20.0
總和 Total	100.0

## 成績評量方式(舊版) Grading

Midterm Exam.+Project 30%

Final Exam.+Project Presentation 50%

Homeworks 20%

## 成績評量方式 Grading

評量方式	百分比
Grading	Percentage
期中考	20.0
期末考	20.0
個人書面報告	20.0
個人口頭報告	20.0
課堂參與	10.0
作業撰寫	10.0
總和 Total	100.0