



## 教學計劃表 Syllabus

課程名稱(中文) Course Name in Chinese	材料電特性分析			學年/學期 Academic Year/Semester	113/1			
課程名稱(英文) Course Name in English	Electrical Characterization of Materials							
科目代碼 Course Code	MS_21300	系級 Department & Year	學二	開課單位 Course-Offering Department	材料科學與工程學系			
修別 Type	學程 Program	學分數/時間 Credit(s)/Hour(s)	3.0/3.0					
授課教師 Instructor	/林育賢							
先修課程 Prerequisite								

### 課程描述 Course Description

Electrical engineering is too vast to cover in one or two courses. Our objective is to introduce the underlying concepts that you are most likely to need. Circuit theory is the electrical engineer's fundamental tool. That is why the first several chapters of this course are devoted to circuits. Furthermore, electronic devices are also introduced in the last parts of the course.

For engineers and scientists can see how electrical engineering can be applied to their fields,

### 課程目標 Course Objectives

讓材料系學生瞭解材料分析所需具備之基本電路理論與相關電子儀表及其分析方法。

This course provides students with an understanding of the basic circuit theory and related electronic instruments and their analytical methods required for materials analysis.

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	Introduction, Overview of Electrical Engineering	
2	Circuits, Currents, and Voltages	
3	Power and Energy Kirchhoff's Current Law Kirchhoff's Voltage Law Introduction to Circuit Elements Introduction to Circuits	
4	Resistive Circuits (I)	
5	Resistive Circuits (II)	
6	Resistive Circuits (III)	
7	Resistive Circuits (IV)	
8	Capacitance and Inductance (I)	
9	期中考試週 Midterm Exam	
10	Capacitance and Inductance (II)	
11	Transients (I)	

12	Transients (II)	
13	Transients (III)	
14	Steady-State Sinusoidal Analysis (I)	
15	Steady-State Sinusoidal Analysis (II)	
16	Diodes	
17	期末考試週 Final Exam	
18	教師彈性補充教學	

### 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)

跨界教學 Transdisciplinary Teaching  跨院系教學 Inter-collegiate Teaching

業師合授 Courses Co-taught with Industry Practitioners

#### 其它 other:

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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)	30%							
期中考成績 Midterm Exam	25%							
期末考成績 Final Exam	35%							
作業成績 Homework and/or Assignments	5%							
其他 Miscellaneous (Classroom Attendance)	5%							

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

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.)

Title: Electrical Engineering  
Principles and Applications

Author : Allan R. Hambley

Pearson Education Limited

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.)

其他補充說明 (Supplemental instructions)