

# 100 學年第 2 學期 半導體電子元件 Semiconductor Device Physics 課程綱要

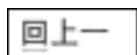
課程名稱：（中文）半導體電子元件		開課單位		半導體專班	
（英文）Semiconductor Device Physics		永久課號		ISE5208	
授課教師：張翼					
學分數		3	必/選修		選修
			開課年級		*
先修科目或先備能力：					
N/A					
課程概述與目標：					
The course will focus on the Semiconductor electronic devices physics and characteristics					
教科書（請註明書名、作者、出版社、出版年等資訊）		1. Simon M. Sze, "Semiconductor Devices: Physics and Technology, 2nd Edition"			
課程大綱			分配時數		
單元主題		內容綱要		講授	示範
				習作	其他
1.Semiconductor physics		Energy bands and carrier concentration in thermal equilibrium Carrier transport phenomena			
2.Semiconductor Devices		P-N junction Bipolar Transistor and Related Devices MOSFET and related Devices MESFET and related Devices Heterojunction Devices(HEMT、HBT)			
教學要點概述：					
1.學期作業、考試、評量					
1.Midterm 40%					
2.Final Exam 40%					
3.Homework 20%					
2.教學方法及教學相關配合事項(如助教、網站或圖書及資料庫等)					
師生晤談		排定時間		地點	
				連絡方式	
每週進度表					
週次	上課日期	課程進度、內容、主題			
1		A practical guide to semiconductor processing			
2		Semiconductor materials and process			

			chemicals
3			Semiconductor properties
4			GaAs material characteristics
5			GaAs material growth technique
6			Bandgap engineering
7			Epitaxy growth techniques: LPE, HVPE, MOCVD, MBE,
8			Physics of compound semiconductor devices
9			PN junction
10			Bipolar Transistor and Related Devices
11			Fabrication process technologies for compound semiconductor devices. Including: Ion implantation, Lithography, Wet and Dry etch, Passivation, Isolation, PECVD , Metallization, Plating, Process control monitoring technology
12			FET
13			MOSFET
14			HEMT
15			HBT
16			Basic patterning process-surface preparation to exposure
17			Basic patterning-developing to final inspection
18			Advanced Photolithography processes

※ 請同學遵守智慧財產權觀念及勿使用不法影印教科書。

備註：

1. 其他欄包含參訪、專題演講等活動。
2. 請同學遵守智慧財產權觀念及勿使用不法影印教科書。



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