

科目名称	Advanced CMOS Technology – Device, Process, Design, and Package	
開講日	前期 金 5限	
単位	1単位	
対象学年	大学院 1 or 2 年（電気電子工学専攻）	
授業科目の目的（日本語）	The series of lecture is to provide an overview of semiconductor industrial practices, covering semiconductor device, process flow with modules, design & technology co-optimization on FinFET technology, and 3D packaging. It would reveals where advanced CMOS technology is from and heading on, challenges encountered, and resolutions.	
	授業のテーマ	授業の内容（90分授業）
1	Semiconductor introduction(30mins) Device physics(60mins)	(1)Semiconductor industry, Foundry business, TSMC and JASM overview. (2) Device physics : PN junction, MOS characteristics
2	Basic process flow introduction	Basic process flow introduction
3	Process module : Lithography, ETCH	Process module LIT/ETCHintroduction
4	Process module : PVD, CVD, CMP	Process module PVD/CVD/CMP introduction
5	(1)Process module : DIF, (2)Manufacturing AMHS	Process module DIF introduction, Manufacturing AMHS introduction
6	Design and Technology Co-Optimization on FinFET technology 1	Introduce design differences between FinFET and Planar technology
7	Design and Technology Co-Optimization on FinFET technology 2	Advanced design mythology to optimize PPA (Performance, Power Area) on standard cell, analog, and 3DIC designs Explain the difference between FinFET and Planar using those three examples
8	3D package	Advanced packaging technology of semiconductor devices