熊本高等専門学校	開講年度	平成28年度 (2016年度)	授業科目	ディジタル信号処理工学

科目基礎情報

科目番号	0018	科目区分	専門 / 選択
授業形態	授業	単位の種別と単位数	学修単位: 2
開設学科	電子情報システム工学専攻	対象学年	専1
開設期	後期	週時間数	2
教科書/教材	DISCRETE-TIME SIGNAL PROCESSING 3/e (Alan V. Oppenheim, Prentice Hall Signal Processing)		
担当教員	嶋田 泰幸		

到達目標

The scope of work is as follows:
2.1 Theory to be covered:
a) basic digital filtering theory (FIR, IIR) and MATLAB based digital filter design. b) basic adaptive filtering theory
b) introduction to SYS/BIOS and DMA
2.2 Hands-on section with EVMDM6437 DSP platform
a) Investigation of the anti-aliasing filter of a DSP system
b) Design and Implementation of Real-time Audio Equalizer based on SYS/BIOS + DMA
c) Design and Implementation of Real-time Adaptive Noise Cancellation System based on SYS/BIOS + DMA

ルーブリック

	理想的な到達レベルの目安	標準的な到達レベルの目安	未到達レベルの目安
評価項目1	Can design/implemet an effective FIR fiter.	Can design simple FIR filters.	Cannnot design simple FIR filters
評価項目2	Can design/implemet an effective IIR fiter.	Can design simple IIR filters.	Cannnot design simple IIR filters
評価項目3	Can design/implemet an adaptive digital filter for noise cancellation.	Can design adaptive digital filters..	Cannnot design adaptive digital filters

学科の到達目標項目との関係

JABEE非対応教育プログラム「電子情報技術専修コース」 (1)-1 JABEE対応教育プログラム「電子・情報技術応用工学コース」 D-1

教育方法等

概要	Digital Signal Processing (DSP) is very popular to model or represent the state or behavior of a physical systems. The objective of this course is to provide a basic introduction to the theory of DSP.
授業の進め方・方法	This class is intensive course and will be held in Ngee Ann Polytechnic in Singapore.
注意点	

授業計画

		週	授業内容	週ごとの到達目標
後期	3rdQ	1週	Fundamentals of Digital Signal Processing	Understand basic digital signal processing theory and solve basic problems.
		2週	Lab 1 : Investigation of Anti- aliasing Filter in DSP System(1)	Understand aim of anti-aliasing filter and confirm effect of anti-aliasing filter
		3週	Lab 1 : Investigation of Anti- aliasing Filter in DSP System(2)	Same as above
		4週	Fundamentals of Digital Filtering – FIR Filter	Understand basic FIR silter and desing simple FIR filters.
		5週	Fundamentals of Digital Filtering – IIR Filter(1)	Understand basic IIR silter and desing simple IIR filters.
		6週	Fundamentals of Digital Filtering – IIR Filter(2)	Same as above
		7週	Fundamentals of Adaptive Filtering(1)	Understand basic adaptive silter and desing simple adaptive filters.
		8週	Fundamentals of Adaptive Filtering(2)	Same as above
	4thQ	9週	Fundamentals of Adaptive Filtering(3)	Same as above
		10週	Introduction to SYS/BIOS	Understand SYS/BIOS of EVMDM6437 and use the DSP board
		11週	Lab 2 : Design and Implementation of Real-time Audio Equalizer(1)	Implement digital filters on EVMDM6437 DSP
		12週	Lab 2 : Design and Implementation of Real-time Audio Equalizer(2)	Same as above
		13週	Introduction to EDMA Engine	Understand DMA of EVMDM6437 and execute Data processing with EDMA function.
		14週	Lab 3 : Design and Implementation of Real-time Noise Cancellation System(1)	Implement adaptive digital filter which cancels noise.
		15週	Lab 3 : Design and Implementation of Real-time Noise Cancellation System(2)	Same as above
		16週		

モデルコアカリキュラムの学習内容と到達目標

分類	分野	学習内容	学習内容の到達目標	到達レベル	授業週

評価割合

	試験	発表	相互評価	態度	ポートフォリオ	その他	合計
総合評価割合	0	0	0	0	0	100	100
基礎的能力	0	0	0	0	0	0	0
専門的能力	0	0	0	0	0	100	100

分野横断的能力	0	0	0	0	0	0	0