

EE784 Analog-to-Digital Converter Design

Fall 2023

Instructor: Prof. Seong-Jin Kim, Department of EE
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Classroom: 106 T204

Class hours: 10:30~11:45am on Tuesday and Thursday

Office hours: 10:00~11:30am on Wednesday

Textbook: Class material

References: Behzad Razavi, Design of Analog CMOS Integrated Circuits,
McGRAW-HILL

Franco Maloberti, Data Converters, Springer

Marcel J.M. Pelgrom, Analog-to-Digital Conversion, Springer

Bang-Sup Song, Micro CMOS Design, CRC Press

Objectives: Introduction to fundamentals of analog-to-digital and digital-to-analog converters and study of various architectures of ADC and DAC with analog building blocks

Grading: Attendance 10%, Exam 40%, Term project 50%

Students should pursue a design project related to data converters.

Attendance

Your class attendance will count for 10% of grading. If you have a special reason not to attend class, you must notice it in advance. More than 2 missing classes will give you a penalty as follows.

0 ~ 2:	0%
3:	-1%
4:	-2%
5:	-4%
6:	-6%
7:	-8%
8 :	-10%

Being late twice will be regarded as being absent once. Late submission of homework will be penalized 20% per day.

Course Schedule

Week 1:	Introduction to data converters
Week 2:	Review of analog integrated circuits
Week 3:	Switched-capacitor circuits
Week 4:	Sample and hold
Week 5:	Digital-to-Analog converters
Week 6:	Fundamentals of Analog-to-Digital converters
Week 7:	Flash ADC
Week 8:	Midterm exam
Week 9:	Integrating ADC
Week 10:	SAR and cyclic ADC
Week 11:	Sub-ranging ADC
Week 12:	Pipeline ADC
Week 13:	Interpolation and folding ADC
Week 14:	Oversampling data converters
Week 15, 16:	Project presentation