

ECE 483 Calendar – DSP System Design

Day	Date	Reading		Topics
1.	Sep-4	1-1		Introduction, software, fixed-point motivation
L1	Sep-5			Lab 1 Tutorial and Review
2.	Sep-8	1-2	6.3	Design Process, tools, filter structures
3.	Sep-9	1-3	6.4	Filter structures
4.	Sep-11	2-1	6.5	Filter structures, common fixed-point applications
L2	Sep-12			Lab 2
5.	Sep-15	2-2	6.6, 4.8.2, 4.8.3	Binary arithmetic, fractional data types, Q format
6.	Sep-16	2-3	6.6, 2.10	Four types of fixed-point effects, quantization error, SNR example
7.	Sep-18	3-1	6.7, 2.10	Coefficient quantization, Round-off noise, filtering noise
L3	Sep-19			Lab 3
8.	Sep-22	3-2	6.8	Filtering noise, overflow and scaling
9.	Sep-23	3-3	6.8.2, class notes	Scaling norms, modulation
10.	Sep-25	4-1	Class notes, 11.4	Single sideband, Hilbert transform
L4	Sep-26			Lab 4
11.	Sep-29	4-2		Single sideband receiver
12.	Sep-30	4-3		Single sideband receiver with interference
13.	Oct-2	5-1		Exam 1
L5	Oct-3			Lab 5
14.	Oct-6	5-2		SSB example
15.	Oct-7	5-3	Class notes, 4.6	Hilbert transform alternatives, multirate
16.	Oct-9	6-1	4.6	Downsampling, upsampling, staged interpolation
L6	Oct-10			Lab 6
17.	Oct-13	6-2	4.7	Polyphase interpolation
18.	Oct-14	6-3	4.7	Polyphase decimation
19.	Oct-20	7-1		Sinusoid generation, table-based, symmetry, oscillator
20.	Oct-21	7-2		Quadrature oscillator
21.	Oct-23	7-3		Project 1 assignment / explanation
L7	Oct-24			Lab 7
22.	Oct-27	8-1	2.10, Appendix A	Noise power spectrum, autocorrelation, filtering noise
23.	Oct-28	8-2		Filtering noise, estimating PSD
24.	Oct-30	8-3		Estimating PSD, Bartlett, Welch
L8.	Oct-31			Project 1
25.	Nov-3	9-1		Exam 2
26.	Nov-4	9-2		Processor specialization for DSP, example, design process
27.	Nov-6	9-3		Project time
L9	Nov-7			Project 1
28.	Nov-10	10-1		industry visit
29.	Nov-11	10-2		Project time
30.	Nov-13	10-3		Software optimization, fitting algorithm to architecture, cost, power, die size
L10	Nov-14			Project wrap-up

Text – *Discrete-Time Signal Processing, 2nd Ed.*, Oppenheim and Schaffer, Prentice Hall: 1998.

also, we will be referring to the draft text for this course *Fixed Point Signal Processing*, Wayne Padgett and David Anderson this will be available on Angel and will change during the quarter as I add to it.

Reading – You are expected to have read the textbook assignments given above *before* you come to class. This course will require you to actively participate by solving problems and asking questions in class.

Instructor – Wayne Padgett, Room: Wayne.Padgett@Rose-Hulman.edu (emailing your questions is encouraged, I will often be able to respond in the evenings, use the Angel Homework forum when possible)

Homework – Homework will be assigned regularly and is due in the format specified in the *ECE Departmental Writing Guidelines* at the beginning of the period.

Grades – The grading policy for this course is stated in *ECE483 General Information*.