

George Mason University
Electrical and Computer Engineering Department

ECE 754: OPTIMUM ARRAY PROCESSING I
Spring 2009

Syllabus

Date	Lecture Topic	Reading	Problem Set	
			Out	Due
1/21	Overview, introduction to spatial filtering, linear arrays	Ch. 1, 2.0-2.4	1	
1/28	Array steering, performance measures	2.5-2.9		1
2/4	Design of deterministic array weights	3.1-3.5	2	
2/11	Null-steering, non-uniform arrays, beamspace processing	3.7-3.11	3	2
2/18	In-Class Quiz #1 , introduction to rectangular arrays	4.1	3	4
2/25	Rectangular arrays, space-time random processes	4.1, 5.1-5.5	4	
3/4	Snapshot models, introduction to optimum beamforming	5.1-5.5, 6.1-6.2		
3/11	Take-Home Midterm (make-up class during spring break)			
3/18	Optimum beamforming	6.2-6.5	5	
3/25	Mismatched and constrained optimum beamformers	6.2-6.7	5	
4/1	<i>No class – a delayed spring break</i>			
4/8	In-Class Quiz #2 , Additional notes on mismatched beamformers	6.6-6.7	6	
4/15	Reduced-dimension beamformers, coherent signals	6.8-6.9, 6.12	7	6
4/22	Adaptive beamformers, sample matrix estimation	7.2-7.3	8	7
4/29	Reduced-dimension adaptive beamformers	7.8-7.10		8
5/6	Take-Home Final Exam			

Reading

Reading assignments are from the textbook *Optimum Array Processing* by Harry L. Van Trees.

Homework

Homework will be assigned approximately weekly. Assignments will include a combination of analytical problems and Matlab programming.

Important Dates for Spring 2009

- February 4: Last date to drop without tuition liability
- February 4: Last date to add courses
- February 20: Last date to drop
- March 9-15: Spring break
- May 5: Last day of classes
- May 6-13: Exam period (Note: No Reading Day this semester)

Rescheduling of Classes

The classes on April 1 and April 8 must be rescheduled due to the fact that the instructor will be away (on a ship in the Philippine Sea deploying an array). These lectures will be made up as follows: the lecture on April 1 will be made up during spring break (the take-home midterm will be given then). The first half of the class on April 8 will be the second quiz, proctored by a graduate assistant. The second half of lecture on April 8 will be made up through a series of notes and multimedia content posted to the course website.