

**George Mason University
Electrical and Computer Engineering Department**

**ECE 754: OPTIMUM ARRAY PROCESSING I
Spring 2009**

Instructor:	Prof. Kathleen Wage Sci and Tech II, Room 243 703-993-1579 kwage [at] gmu.edu	Class:	Wednesday 7:20-10:00 pm Innovation Hall, Rm 134
		Office hours:	Wednesday 4-6pm or by appointment

Prerequisite: ECE 528 & ECE 734, or permission of instructor

Required Text: *Optimum Array Processing*, H.L. Van Trees (Wiley-Interscience, 2002)

Course Webpage: <http://ece.gmu.edu/~kwage/ece754/spr09>

Course Description

This course explores array processing techniques for radar, sonar, seismic, and communications applications. Topics include classical pattern shaping for 1-d and 2-d arrays, deterministic design for sidelobe control and nulling, space-time random processes, optimum and adaptive beamforming.

The work for this course consists of weekly homework assignments, two in-class quizzes, and two take-home exams (midterm and final). The homework assignments and the take-home exams require Matlab programming for analysis and design of array processing algorithms.

Grading

The final grade in the course is based on my best assessment of your understanding of the material and participation during the semester. The homework, quizzes, and exams are combined with the following rough weighting to give a preliminary final grade:

Homework:	30%	(lowest score will be dropped)
In-Class Quizzes:	20%	(Two quizzes, 10% each)
Take-home Midterm:	20%	
Take-home Final:	30%	

General Policies

- The course website contains assignments, solutions, lecture materials, and announcements. Check it regularly for updated information.
- Email is the best way to contact me to set up an appointment or to ask short questions.

Class Meetings

- It is assumed that you will attend all classes, but attendance will not be formally recorded. If you need to miss class, it is your responsibility obtain the notes from another student.
- It is strongly recommended that you do the assigned reading prior to coming to class.

Homework

- Homeworks are due at the **beginning of class** on the day indicated by the handout. Solutions will be posted on the course webpage. **No late assignments will be accepted.**

- The homework should be neat with the pages stapled or clipped together. The problems should be in sequential order. Answers should be circled or otherwise indicated. All plots should be appropriately labeled. A hard copy of any Matlab code should be included, and the instructor may request an electronic copy for some assignments.

Exams

Exam and quiz dates are specified on the syllabus. Under certain circumstances, rescheduling of an exam may be allowed, provided that the exam is taken **before** the regularly scheduled exam.

Grade Changes

A student requesting a grade change for any assignment must provide the instructor with the following within 2 *class periods* after the work is returned: the assignment and a paragraph describing why you feel you should receive additional points for the work. Note that in some cases, it is possible that what you wrote for the assignment indicated a better understanding of the problem than you actually possess. If the paragraph you submit indicates that you don't understand the problem as well as the grader thought you did, then your score *may be reduced*.

Honor Code

All students are expected to abide by the George Mason University Honor Code. *Moderate* sharing of ideas and comparison of answers on homework and Matlab projects is acceptable, but *copied work is not acceptable*. All exams will be closed book and closed notes unless specifically stated otherwise by the instructor. All exam work must be your own. Any reasonable suspicion of an honor code violation will be reported.