George Mason University  
Electrical and Computer Engineering Department  

ECE 754: OPTIMUM ARRAY PROCESSING I  
Fall 2013

Instructor: Prof. Kathleen Wage  
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Class: Monday 4:30-7:10 pm  
Thompson Hall, L004  

Office hours: Monday 2:30-3:30pm  
Tuesday 4-5pm  
or by appointment

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


Course Webpage: [http://ece.gmu.edu/~kwage/courses/ece754/fall13](http://ece.gmu.edu/~kwage/courses/ece754/fall13)

Course Description

This course explores array processing techniques for radar, sonar, seismic, and communications applications. Topics include classical pattern shaping, 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 exams, and two take-home projects. The homework assignments and the take-home projects 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: 15% (lowest score will be dropped)
- Exams: 40% (Two exams, 20% each)
- Midterm Project: 22.5%
- Final Project: 22.5%

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 and Projects

- Homeworks and Projects 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 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. You must negotiate the rescheduled exam date at least 2 weeks prior to the exam.

Grade Changes
A student requesting a grade change for any assignment must provide the instructor with the following within 1 class period 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.

Academic Integrity
GMU is an Honor Code university, and all students are expected to abide by the Honor Code. Please see the University Catalog for a full description of the code and the honor committee process. The principle of academic integrity is taken very seriously and violations are treated gravely.

What does academic integrity mean in this course? Essentially it means this: when you are responsible for a task, you will perform that task. When you rely on someone else’s work in an aspect of the performance of that task, you will give full credit in the proper, accepted form.

- 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. If you have any doubts about these policies, please ask for guidance and clarification.

GMU Email Accounts
Students must use their Mason email accounts, either the existing MEMO system account or a new MASONLIVE account, to receive important University information, including messages related to this course. See http://masonlive.gmu.edu for more information.

University Policies
The University Catalog, http://catalog.gmu.edu, is the central resource for university policies affecting student, faculty, and staff conduct in university academic affairs. Other policies are available at http://universitypolicy.gmu.edu/. All members of the university community are responsible for knowing and following established policies.

Office of Disability Services
If you are a student with a disability and you need academic accommodations, please see me and contact the Office of Disability Services (ODS) at 993-2474. All academic accommodations must be arranged through the ODS (http://ods.gmu.edu).