

Instructor: Benn Coifman coifman.1@osu.edu
 Office: Hitchcock 491B (292-4282) and
 Caldwell 211 (688-8324)
 Office Hours: Tu Th 1:48-2:48

Course web page: <http://www.ceegs.ohio-state.edu/~coifman/eece694f07/>

Required Texts:

- Traffic Flow Theory Monograph, <http://www.tfhrc.gov/its/tft/tft.htm>
- Matlab on-line documentation

Recommended Texts:

- Matlab Student version (see link from course web page)
- Introduction to Matlab books (no specific title)

Transportation GRAs Required Text: (Come to first class before buying)

- C.F. Daganzo, *Fundamentals of Transportation and Traffic Operations*, Pergamon (1997)

Lectures: Tu Th 12:30-1:48, Bo 437

Final Exam: Tu, Dec 4, 1:30 - 3:18 PM (verify)

1) Course Description:

An interdisciplinary course bringing together electrical engineering tools and transportation applications. Students will gain valuable experience working in teams while learning Matlab, traffic flow, surveillance and control.

2) Method of Evaluation

| | |
|---------------------------------------|-----|
| Group assignments | 40% |
| Group project | 40% |
| Individual pop quizzes and final exam | 20% |

You must turn in ALL assignments and complete the final exam pass. After meeting the first criteria, you must get at least 50% of the total points to get a "C" or better (if I grade hard, I may elect to modify that to "B" or better).

[Tentative] In addition, transportation GRAs will be encouraged to take one or two credits of independent study, they will be assigned additional reading and Individual homework. The Individual homework will be the sole basis for evaluation for the additional credit.

3) Individual Assignments

Individual assignments are meant to test the students' knowledge of basic concepts presented in lecture and readings. While I would like to give these assignments to all students, we simply do not have enough time in the allotted credit hours. Assuming the tentative companion credits are added, students taking these credits will be expected to complete the individual assignments. All

other students are NOT expected to turn in these assignments but they will help further your understanding of transportation systems.

Students will be graded on content and presentation. The student is expected to exercise professional judgement as to what to present and what not to present (e.g., you may lose credit for presenting too many figures, or too few). Naturally, you will receive feedback on your performance throughout the course and this fact will be considered when grading.

Unless you explicitly receive permission of the instructor, you may not discuss the individual assignments with anyone except the instructor until after the solutions are provided.

4) Group Assignments

Students will work in groups to extract meaningful information from traffic data. Each group will submit a single report (see later sections of this syllabus for guidelines) and each member will receive the same single grade. All members of the group will be expected to know the solution(s) used by the group. You may be asked short answer questions in class questions along the lines of, "how did your group ___?" as well as providing your estimated percentage split of the work, and identifying which member is most deserving of a bonus. Thus, even if one person does all of the work, they must educate the rest of the team or the entire team will lose points. However, you are strongly encouraged to work together on these group assignments (if it does not explicitly say "group assignment" then ask, you do not want any questions to arise when work is suppose to be done alone). If problems arise, we will address them during the quarter.

(semi) weekly assignments

- 1) load loop detector data and parse
<change group members>
- 2) map loop detector data to the respective stations
<change group members>
- 3) aggregate single loop measurements
<change group members>
- 4) pulse matching and single vehicle measurements (length at two adjacent stations during ff)
<change group members>
- 5) visualization

Often the assignments build on one another, so you will be provided working solutions after the due date.

Ideally groups should be of only two students, but sometimes groups of three will be necessary. Groups can never have more than two graduate students, and when they do have two graduate students, they must be from different departments or the group needs to get my permission.

After each assignment the groups will be redistributed, potentially at the instructor's discretion. Whenever the groups change, any follow up work on a previous assignment is to be completed with the old group that originally submitted the work.

Unless otherwise noted or you explicitly receive permission of the instructor, you may not discuss the group assignments with anyone outside of your group and the instructor until after the solutions are provided.

| day | date | Hw1 | Hw2 | Hw3 | Hw4 | Hw5 | Group project | |
|--------------|-------|------------------------|------------------------|------------------------|------------------------|--|---|--|
| Th | 9/20 | | | | | | | |
| Tu | 9/25 | Flow chart | | | | | assigned readings and pop quizzes on random days, some self graded, some professor graded | |
| Th | 9/27 | | Flow chart | | | | | |
| Tu | 10/2 | Programming | Flow chart | No lecture | | | | |
| Th | 10/4 | | | | | | | |
| Tu | 10/9 | | Programming | Flow chart | | | | |
| Th | 10/11 | Flow chart to solution | | | | | | |
| Tu | 10/16 | | | Programming | Flow chart | | | |
| Th | 10/18 | | Flow chart to solution | | | | | |
| Tu | 10/23 | | | Flow chart to solution | Programming | Flow chart | | |
| Th | 10/25 | | | | | Prepare 1 page proposal, seek feedback from instructor | | |
| Tu | 10/30 | | | | Flow chart to solution | | | |
| Th | 11/1 | | | | | | | |
| Tu | 11/6 | | | | | Flow chart to solution | | |
| Th | 11/8 | | | | | | | |
| Tu | 11/13 | | | | | Project work | | |
| Th | 11/15 | | | | | | | |
| Tu | 11/20 | | | | | | | |
| Thanksgiving | 11/22 | No lecture | | | | | | |
| Tu | 11/27 | | | | | | | |
| Th | 11/29 | | | | | Presentations | | |
| Tu | 12/4 | Final exam 1:30-3:18 | | | | | | |

OTEC
10/23-24

5) Late homework will receive the following penalties:

30% will be deducted from homework handed in after the class period in which it is due, or, 90% will be deducted from homework handed in after the solutions have been provided, or, no credit for homework handed in a week after the date the homework was due, but the fact that it was submitted will still count toward "turning in ALL assignments".

6) Group Projects

Over the last third of the quarter students are expected to participate in a group project. The group projects will be more involved than the group assignments, students will propose a topic to me and I will help refine it as necessary (you are encouraged to begin discussing possible topics early). Possible topics include: tracking propagation of waves past many detector stations, vehicle reidentification, image processing, GPS data management, or other ideas that you may have. For groups comprised entirely of non-transportation students, I will allow non-transportation topics if they include sufficient rigor and data analysis. The group project will include a hardcopy final report and an oral presentation.

While the group homework required you to change partners every time, on the group project you can return to a favorite partner from the past or seek a new team.

7) The key to writing a good report:

You must be of four minds as you write. Simultaneously know the intelligent layman's view (your audience) and your advanced knowledge from experience. Similarly, you must focus on each sentence as you write it and still know what the entire document will say. Namely, be efficient with your writing, use exactly enough words to clearly present a sound argument. This last point is often overlooked, do not discuss topics until you have introduced them and do not introduce a given topic several times. The narrative should flow in a professional manner from start to finish and **BE SURE TO PROOF READ YOUR WORK BEFORE TURNING IT IN.**

8) Collaborative work and working together:

The homework assignments are designed to ensure the students master skills and concepts presented in the course and/or beneficial for their professional career. If another student makes ANY contribution to your assignment, (1) note who you worked with and what their contributions to your submission were, (2) make sure you understand all of the concepts to the extent that you could successfully undertake similar work on your own. As an incentive, there is a good chance you will see one or more pop quiz in this course that emphasizes material from the assignments. The individual assignments are to be done alone, period, end of story (okay, questions to the instructor are welcome). On the group assignments, collaborative work among the group is encouraged and expected, but not to the point where one student does the work for another. It is assumed that all of the students in this course understand these principles, but for completeness, the University's guidelines for academic misconduct are copied below.

If you are unsure what is an acceptable level of collaboration for a given assignment, then ask. If you do not feel comfortable citing and crediting your collaborators, then you have probably stepped over the line of acceptability. Most importantly, if you do not understand an important concept for an assignment, then please drop by or set up an office hour so that we can discuss the matter one-on-one and ensure that you learn the material.

CE/EE 675- Initially, the groups will consist of no more than two students and will have no more than one graduate student per group. In general, without permission of the instructor, the groups can have:

- at most one grad student from any given department.
- at most two grad students total
- at most three students total

1.0 Academic Misconduct (3335-31-02) [as reported at <http://www.osu.edu/offices/oaa/procedures/1.0.html>]
Academic misconduct is defined as any activity which tends to compromise the academic integrity of the institution, or subvert the educational process. Examples of academic misconduct include, but are not limited to:

- violation of course rules as contained in the course syllabus or other information provided the student; violation of program regulations as established by departmental committees;
- providing or receiving information during quizzes and examinations such as course examinations and general examinations; or providing or using unauthorized assistance in the laboratory, at the computer terminal, or on field work;
- **submitting plagiarized work for an academic requirement. Plagiarism is the representation of another's works or ideas as one's own; it includes the unacknowledged word for word use and/or paraphrasing of another person's work, and/or the inappropriate unacknowledged use of another person's ideas;**
- falsification, fabrication, or dishonesty in reporting research results;
- serving as, or enlisting the assistance of, a "ringer" or substitute for a student in the taking of examinations;
- alteration of grades or marks by the student in an effort to change the earned grade or credit; and
- alteration of University forms used to drop or add courses to a program, or unauthorized use of those forms