INSTRUCTOR: Rex K. Kincaid  
Office—126 Hugh Jones Hall  
Email—rrkinc@math.wm.edu  
Office Hours—2-3:30 p.m. T and 2-4 p.m. R or by appt.

PREREQUISITES: Csci 141, Csci 241, and Math 323 (high-level programming language, elementary data structures and rudimentary knowledge of optimization) or their equivalent.

DESCRIPTION: Network location problems arise in many diverse applications. Examples include locating facilities, sensors, components, vehicles, people, services, and actuators. The course will include topics from classical location theory (covering, center and median problems) as well as more recent topics in the literature.

KEY DATES: The add/drop deadline is February 5 and the withdraw deadline is March 29. The midterm exam is slated for March 22 and the final project is due during our final exam time slot 2-5 p.m. Thursday, May 13.

TOPIC OUTLINE:
1. Introduction (ch. 1 of Daskin) [1/2 week]  
2. Complexity Theory (ch. 3 of Daskin) [1/2 week]  
3. Covering Problems (ch. 4 of Daskin) [2 weeks]  
4. Center Problems (ch. 5 of Daskin) [2 weeks]  
5. Median Problems (ch. 6 of Daskin) [2 weeks]  
• Midterm Exam (tentatively March 22)  
6. Students present research articles [2 weeks]  
7. Fixed Charge (ch. 7 of Daskin) [1 week]  
8. Extensions of Location Models (ch. 8 of Daskin) [2 weeks]  
9. Meet for individual/group projects [1 week]

Students will work on individual or group projects/papers during the last part of the semester. This can take the form of an application of an existing model, development of a new formulation, or implementation of a solution algorithm. Here is a link to information about the textbook, https://daskin.engin.umich.edu/network-discrete-location/.

REFERENCES:  

**HOMEWORK:** Homework emphasizing and extending lecture material will be assigned and graded. Late homework is not accepted except in the case of an unanticipated absence (serious illness, death in the family, loss of your favorite DVD, etc.).

**GRADES:** The midterm exam will be “almost closed book,” i.e. students may use two 8.5 by 11 inch sheet of notes. Such notes may be on both sides of the paper, but they should be in orginal pen or pencil, not photo-copies. The course project will be due no later than the scheduled final exam time slot (May 13 at 5 p.m.). Homework assignments will be given periodically throughout the semester and together will count 30% of the final course grade. Some homework assignments will involve programming and the use of optimization software. Finally, class participation is important. 5% of the course grade will reflect your participation and insightfulness in class discussions.

- **Homework** 30%
- **Midterm Exam** 30%
- **Presentations** 10%
- **Projects** 25%
- **Discussion** 5%