
This course is a capstone course for mathematics and applied mathematics majors. Students will read and make presentations on topics in graph theory. Each student will complete a project on a topic to be agreed upon by the instructor and student. Students will present their results in writing and orally.

The course will be run in a seminar style, with students doing most of the lecturing. The level and pace will be adjusted to fit the background and interests of the students in the class. The first six weeks will focus on background material on graphs. For the rest of the course, students will work on projects such as the following:

1. Edge colorings with applications to scheduling problems.
2. Dijkstra’s shortest path algorithm.
4. Art gallery and fortress problems, determining the minimum number of guards needed.
5. Optimal assignment problems and the Hungarian algorithm.

Students with an interest in programming may use Mathematica or Sage.

Timetable:

- **Weeks 1 – 6**: Make presentations on introductory topics in graph theory. Choose project topics by February 18, 2013.
- **Weeks 7 – 12**: Work on projects and prepare written reports. A typed version should be completed by April 5, 2013.
- **Weeks 13 – 16**: Polish written reports. Practice oral reports. Prepare posters. Give presentations to the mathematics department.

Instructor:
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