Syllabus

Course coordinator: Asst. Prof. Robert M. Curry (rcurry@usna.edu)

Textbook: (None)

Course description: This course introduces graph algorithms for problems in network and combinatorial optimization. Topics include: minimum spanning trees, matchings, shortest paths, maximum flows and minimum cost flows. Students will also be expected to program algorithms on a computer.

Course objectives: By the end of this course, students will be able to

(i) think critically and creatively;

(ii) problem-solve;

(iii) create, code, and analyze various network and graph algorithms;

(iv) successfully collaborate and code in groups;

(v) clearly and concisely communicate the steps of various algorithms.

Approximate weekly course schedule:

Week	Topic
Par 1: Foundational Algorithms	
1	Introduction to Notation, Algorithms, and Software.
2	Graph Search Algorithms
3	Minimum Spanning Tree Algorithms
4	Shortest Path Algorithms
5	Maximum Flow Algorithms
6	Catch up & Exam
Part 2: Modeling Various Applicatioons	
7	Naval Applications
8	Logistics Applications
9	Social Network Applications
10	Engineering Applications
11	Linguistic Applications

12	Catch up & Exam

Part 3: Putting Everything Together

13	Group Project
14	Group Project
15	Group Project
16	Group Project & Review