

CS280 is an introduction to the design and analysis of algorithms. The primary goal of this course is to introduce some common techniques and issues that arise in the study of algorithms. The topics include dynamic programming, network flows, NP-completeness, and much more. Students are expected to be comfortable with discrete math (MATH 220) and data structures (CS 150/151).

The purpose of CS280 is to give you the confidence, tools, and techniques to tackle difficult problems. You will learn how to assess the main challenges of a problem, find one or more solutions, and determine which solution is best. Finally, you will learn how to recognize and prove that certain problems are computationally intractable, and what can be done in these situations.

<b>Week 1</b> Feb 3 - 5	Introduction, stable matchings, some representative problems.	<b>hwk 1</b>
<b>Week 2</b> Feb 10 - 12	Greedy algorithms, minimum spanning trees.	<b>hwk 2</b>
<b>Week 3</b> Feb 17 - 19	The divide & conquer technique, dynamic programming.	<b>hwk 3</b>
<b>Week 4</b> Feb 24 - 26	More dynamic programming.	<b>hwk 4</b>
<b>Week 5</b> Mar 3 - 5	Yet more dynamic programming.	<b>test #1</b>
<b>Week 6</b> Mar 10 - 12	An introduction to network flows, algorithms for flows.	<b>hwk 5</b>
<b>Week 7</b> Mar 17 - 19	The min-cut max-flow theorem, matchings.	<b>hwk 6</b>
Mar 24 - 26	<b>Spring Break</b>	
<b>Week 8</b> Mar 31 - Apr 2	Applications of flows and cuts.	
<b>Week 9</b> Apr 7 - 9	Computational hardness, reductions, NP-complete problems.	<b>hwk 7</b>
<b>Week 10</b> Apr 14 - 16	More NP-complete problems.	<b>test #2</b>
<b>Week 11</b> Apr 21 - 23	Solving special cases of NP-hard problems.	<b>hwk 8</b>
<b>Week 12</b> Apr 28 - 30	Introduction to approximation algorithms.	<b>hwk 9</b>
<b>Week 13</b> May 5 - 7	More approximation algorithms & online algorithms.	<b>hwk 10</b>
<b>May 16</b>	<b>Final. 9-11am.</b>	