Amongst other topics, the course covers the following:

- Binomial heaps, an example of worst-case analysis
- Amortized analysis
- Fibonacci heaps, an example of amortized analysis
- Hash tables, an example of randomized analysis
- Greedy algorithms and matroids
- Dynamic programming and all-pairs shortest paths
- Maximum flow
- Linear Programming and Duality
- Primal-Dual schema as an algorithmic design tool
- Approximation algorithms