You can describe algorithms and prove their correctness using precise

mathematical terminology and techniques. For example:

• Basic data structures (list, array, heap)

• Basic math notation (logic, sets, functions, ...)

• Proofs (contradiction, induction.)

• Asymptotic notation (big-O...)

• pseudocode

• basic counting strategies

• Graphs and special types of graphs

• Graph search : First two weeks

• Using data structures : Mixed between graph search and greedy: third week

• Greedy Algorithms : Fourth and fifth week

• Divide and Conquer: Sixth and Seventh week

• Dynamic Programming: Seventh and eighth week

• Iterative Improvement (e.g., network flow). If we stay on schedule

• Reducing to a previously solved problem: throughout and again in P vs. NP