

## DM19 – Algorithms and Complexity – E04 – Lecture 11

### **Announcement**

On Wednesday, November 17, Julie Jespersen and Morten Nyhave Nielsen, DSB-S-TOG A/S, will speak at 14:15 in U2 for two times 45 minutes. It will be a Computer Science and Industrial Applications Colloquium on “Optimization at DSB S-tog A/S: Solution approaches and open problems”.

### **Lecture, November 15**

We finished with NP-completeness and began on approximation algorithms from chapter 35 in the textbook, covering section 35.2.1

### **Lecture, November 22**

We will continue with approximation algorithms from chapter 35 in the textbook.

### **Lecture, November 29**

We will finish with approximation algorithms from chapter 35 in the textbook and randomized rounding for MAX-SAT from the notes from Motwani and Raghavan’s book *Randomized Algorithms*. We will also begin on brand-and-bound from the notes by Jens Clausen.

### **Problems to be discussed December 2 and November 26**

1. 35.1-1, 35.1-3, 35.1-4, 35.1-5.

2. 35.2-3, 35.2-5. (For problem 35.2-3, assume that the triangle equality holds. Is that necessary? As a hint, notice the similarity to Prim's algorithm for MST.)
3. Explain how to make the approximation algorithm given for vertex cover on page 1025 run in time  $O(|E|)$ .
4. 35.3-5.
5. 35-1. (For part a of 35-1, you might consider reducing from the set-partition problem which is defined in exercise 34.5-5.)