

Kandidatarbete  
Examenskod ACEX11



## On the stability of unsaturated natural slopes

**Occasionally, the classical stability calculation of a stable natural slope yields a safety factor that is less than one. This suggests that the slope should have already failed. How can this be explained? Are we missing something in our calculations?**

Besides introducing the basic concepts related to the mechanical behavior of unsaturated soil, the project discusses a simple analysis method to include partial saturation effects in slope stability calculations. The employed hydraulic boundary conditions in the project resemble possible scenarios of environmental loadings (evaporation, rainfall, etc.). The project language is English.

### Literature recommendation:

- Fredlund, D.G. and Rahardjo, H., 1993. Soil mechanics for unsaturated soils. John Wiley & Sons.
- Öberg, A.L., 1997. Matrix suction in silt and sand slopes. PhD thesis, Chalmers University of Technology.

**Target group of students**  
Civil Engineering

**Group size**  
3-6

**Special requirements**  
**BOM356**

**Suggestion from**  
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**Can the project be duplicated?**

Yes

**If any of the following aspects to be integrated**

- ☐ Digitalization
- ☒ Sustainability
- ☒ Climate change
- ☐ Gender equality, equal