

# Master Thesis (MA, 30 ECTS)

## Two geologists – three opinions

### On the variability and consequences of geological roughness classifications conducted by different observers

#### Description

Following the current standards, a geological investigation of rock surfaces includes a “manual” estimation of the roughness. The EN ISO 14689-1 states that the goal of the estimation is to classify a surface into either smooth or rough on a millimeter scale and into planar, stepped or undulating on a centimeter and meter scale. Consequently, the outcome of this kind of geological investigation depends on the observers own perception of what “feels” smooth or rough, respectively planar, undulating or stepped.

Therefore, in a first step, this study investigates how big the variability of classifications is when different observers classify the same surface. Special test specimen should be classified by a statically relevant number of persons. To acquire reproducible results the test specimen will be generated by digitizing and 3D printing of rock surfaces.

Based on different case studies, in a second step it will be investigated what the actual consequences of different classifications are within the further geotechnical processing.

#### Workflow

1. Literature research
2. Selection of suitable rock surfaces (especially specimen that are non-trivial to classify)
3. High resolution digitization of the surfaces (photogrammetry) and production of realistic 3D printed test samples
4. Conducting a survey on representative groups (students, engineering geological professionals, people unfamiliar with the matter...)
5. Statistically evaluating the results
6. Investigating the consequences of the results on different case studies

The study will be done in cooperation with the geological consultancy company geo.zt – poscher beratende geologen, based in Tyrol/Austria.

Templates for the thesis and a guideline for scientific writing can be found on the institute’s homepage. The language for the thesis can either be in English (favoured) or in German.

**Start:** by appointment

**Duration:** ca. 6months

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