Uncertainty in Surface Roughness Measurement
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Problem:
For a measurement to be meaningful, a statement of uncertainty must accompany the result. However, surface roughness measurement is relatively immature in terms of the provision of statements of uncertainty and it is usually the case that no statement is provided at all!

Aim:
The aim of this project is to develop and implement a coherent learning system which can be a supplement for existing curricula of engineering studies and higher-level vocational training concerning the uncertainty of surface roughness measurement.

Source of Uncertainty (Stylus Instrument):
- X-Axis
- Z-Axis
- Lc filtering
- Ls filtering
- Stylus tip
- Measuring force
- Sampling interval
- Software
- Inhomogeneity of surface
- ... (additional uncertainties)

Estimate of Uncertainty:
There are various approaches to obtaining an estimate for the value of a measure together with its associated standard uncertainty. The ISO Guide to the Expression of Uncertainty in Measurement (GUM) is widely used and accepted as an approach to uncertainty evaluation.

In recent times, more general approaches to uncertainty evaluation have gained recognition, including the use of Monte Carlo simulation (MCS). MCS is a computationally intensive approach to uncertainty evaluation, but removes many of the approximations that are part of an approach based on the GUM.

Delivery:
This course will be available at: www.sam-emu.ath.eul

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