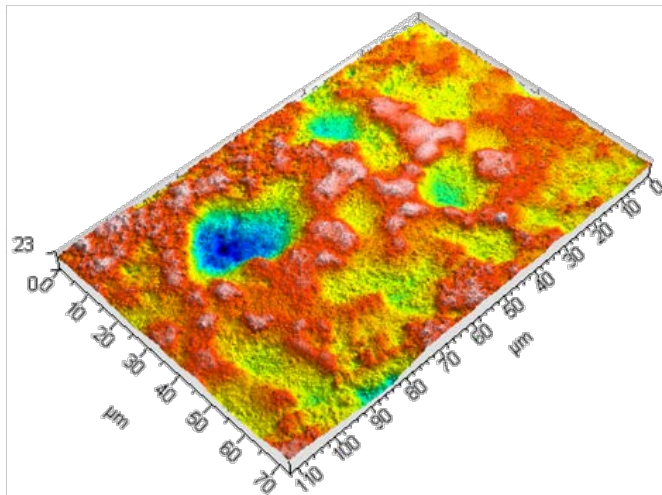


Course syllabus for

P63: Metrology and Properties of Engineering Surfaces

Syllabus adopted 2020-10-02 by Professor Bengt-Göran Rosén, Produktion2030 Head of Education



Credits	4 hec
Grading scale	Satisfactory/not satisfactory
Education cycle	Third-cycle
Examiner	Docent Zlate Dimkovski, Halmstad University
Eligibility	A Master's degree in production engineering or equivalent
Aim	The course aims to provide a basic understanding of contact and non-contacting metrology technologies (line-profiling, areal integrating as well as areal-topography methods) with focus on characterization of surface texture including geometrical form, waviness, roughness and imperfections.
Intended learning outcomes	<p>After completion of the course the course participant should be able to</p> <ul style="list-style-type: none"> understand the possibilities and limitations of the current metrology framework (hardware and software) with practical applications in tribology and quality control.

- understand the basics of line-profiling and areal-topography characterisation techniques concerning pre-processing, filtration, segmentation and parameterisation of engineering surfaces.
- apply various surface characterisation techniques on the own research, and discuss the results.

Course content	<p>The course focuses on metrology and characterisation of engineering surfaces at different stages of their development: testing, manufacturing and operation. Practical applications from the participants' own research projects are included.</p> <p>The course covers various metrology technologies, e.g. Atomic Force Microscopy-AFM, Scanning Electron Microscopy-SEM, Light Optical Microscope-LOM, Stripe projection technique, Confocal microscopy, Mechanical Stylus, Coherent Wave Scatter System - CWS, and Coherent Scanning Interferometry – CSI, as well as filtration, segmentation and parameterisation techniques according to current ISO standards.</p>
Course organisation	<p>Three days of lectures and workshops including hands-on applications with different metrology instruments and software for surface analysis. The participants are expected to bring their own samples of interest as measuring objects.</p>
Examination	<p>A successful completion of this course will be evaluated on the following:</p> <ul style="list-style-type: none">• seminar based on the participants' applied surface characterisation.• written report based on the surface characterisation and discussion of the individual application.
Literature	<p>T.R. Thomas (1999) <i>Rough Surfaces</i> 2nd ed. , Imperial College Press, ISBN 1-86094-100-1 [out of press but available through examiner or the author directly]</p> <p>R. Leach (2013) <i>Characterisation of Areal Surface Texture</i>, Springer-Verlag, ISBN 978-3-642-36457-0.</p> <p>Hand-outs.</p>