Advanced Manufacturing Processes 2, 9 HE credits
Avancerade tillverkningsprocesser 2, 9 hp

Established: 2018-12-21
Established by: Department of Engineering Science
Applies from: H19

Learning outcomes
After taking the course, students should:

Knowledge and understanding
• demonstrate in-depth knowledge about terminology, underlying theory and principles of machining and metal forming.
• demonstrate an understanding of production economy, testing, evaluation and measurement methods used in machining and metal forming.
• demonstrate knowledge about scientific literature on machining and metal forming, thus being able to monitor the development in these areas.

Skills and abilities
• demonstrate the ability to use the understanding of the fundamental mechanisms in machining and metal forming to improve productivity.
• investigate root-cause of manufacturing process problems in machining and metal forming.
• to independently analyze and argue for different machining and metal forming processes.

Entry requirements
Advanced Materials Science - K0002923

The forms of assessment of student performance
Individual written exam and assignments, individual oral presentations in seminars and individual laboratory reports.

Other regulations
Course grading: F/Fx/E/D/C/B/A - Insufficient, Insufficient- more work required before the credit can be awarded, Sufficient, Satisfactory, Good, Very Good, Excellent
Course language: English

General rules pertaining to examination at University West are available at www.hv.se.

If the student has a decision/recommendation on special support due to disability, the examiner has the right to examine the student in a customized examination form.
Cycle
Second cycle

Progressive specialization
A1F - second cycle, has second-cycle course/s as entry requirements

Main field of study
Mechanical Engineering
Advanced Manufacturing Processes 2, 9 HE credits
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Course contents
Within this course, two important manufacturing technologies, machining and forming are discussed.
The machining part includes a discussion of the following subjects:
• Machining processes
• Workpiece quality
• Chip formation
• Tool wear
• Cutting tool materials
• Cutting fluids
• Finite element method in machining
• Machining dynamics

The Forming section includes the following subjects:
• A general plasticity theory: Yield criterion, Flow rule and Hardening rules
• Forming of Sheet Metals: Bending, Stretching, Plane-strain stretching and Drawing
• Formability Problems
• Measurement of Deformation
• Formability of Sheet Metals
• Forming Limit Diagram
• Press operations
• Design of different draw dies
• Die materials and applications
• Surface hardening and coating
• Press lines
• Tool manufacturing and project planning
• Forming process variables
• Sheet metal forming simulation