KURSPLAN

Smält metalls processteknik - Aluminiumlegeringar, 3 högskolepoäng

Liquid Metal Processing - Aluminum Alloys, 3 credits

Kurskod:	TALS22	**Utbildningsnivå:**	Avancerad nivå
Fastställd av:	VD 2022-03-01	**Utbildningsområde:**	Tekniska området
Gäller fr.o.m.:	2022-08-01	**Ämnesgrupp:**	MA2
Version:	1	**Fördjupning:**	A1F
		Huvudområde:	Produktutveckling

Lärandemål

After a successful course, the student shall:

Kunskap och förståelse

• display knowledge of the common impurities and tramp elements in aluminium and their removal

• demonstrate comprehension of the industrial practice for the treatments of aluminium alloy melts

Färdighet och förmåga

• demonstrate the ability of selecting a suitable treatment process for a specific aluminium alloy and casting process through the use of thermodynamics and kinetics for the intended reactions and process steps

Värderingsförmåga och förhållningssätt

• demonstrate the ability to predict the required additional amounts and treatment times for the intended and judging if the process outcome had the intended effect

Innehåll

The critical content is related to the aluminium alloy preparation including, light metal scrap recycling technologies, melt refining and impurity control to enable sustainable management of circular materials. The practices for microstructural engineering such as grain refinement and microstructural modification.

The course includes the following elements:
1. The effect of dissolved impurities and inclusions on the mechanical properties of metal products ;
2. Thermodynamics and transport properties ;
3. Properties of various metals, impurity content, and refining ;
4. Removal of dissolved impurity elements from molten metals ;
5. Removal of inclusions ;

6. Addition of alloy components ;
7. Solidification and refining ;
8. Refining and recycling metallurgy in the future;
9. Industrial practice for aluminium alloys;

Undervisningsformer

Lectures, assignments and discussion forum.

Undervisningen bedrivs på engelska.

Förkunskapskrav

Passed courses at least 90 credits within the major subject Mechanical Engineering, 15 credits Mathematics, and completed course in Component Casting, 6 credits and proof of English proficiency is required (or the equivalent).

Examination och betyg

Kursen bedöms med betygen 5, 4, 3 eller Underkänd.

Poängregistrering av examinationen för kursen sker enligt följande system:

Examinationsmoment	Omfattning	Betyg
Inlämningsuppgifter	0,5 hp	U/G
Quizzes	0,5 hp	U/G
Examination[I]	2 hp	5/4/3/U

[I] Bestämmer kursens slutbetyg vilket utfärdas först när samtliga moment godkänts.

Kurslitteratur

The literature list for the course will be provided eight weeks before the course starts.

Torvald Abel Engh, Principles of Liquid Metal Refining ISBN: 019856337X, ISBN: 9780198563372

Handouts on industrial practice